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Except where indicated otherwise in the table of contents the following is a complete translation of the Russian-language monthly journal VOYENNO-ISTORICHESKIY ZHURNAL.

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Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 9, Sep 86 (signed to press 26 Aug 86) pp 3-11

[Article by Col Gen M.D. Popkov, military council member and chief of the Political Directorate of the Ground Forces, published under the rubric "The Decisions of the 27th CPSU Congress in Life"]

[Text] The entire history of the Armed Forces shows that strong, aware discipline on the part of the Soviet military is a major condition for victory on the battlefields and for successes in combat training and service. The CPSU has constantly given and does give great attention to indoctrinating the armed defenders of the motherland in a spirit of conscious discipline, seeing in this one of the most important factors for maintaining the high combat readiness of the troops. The new version of the CPSU Program adopted at the 27th CPSU Congress emphasizes that "the party in the future will be constantly concerned for making the combat potential of the Soviet Armed Forces a strong alloy of military skill and high technical equipping, ideological strength, organization and discipline of the personnel and their loyalty to their patriotic and international duty."(1)

* * *

V.I. Lenin fully disclosed the foundations of socialist military discipline as discipline of a higher order. In analyzing the victories of the Red Army during the years of the Civil War, V.I. Lenin in February 1920, pointed out that the army was created by a long, difficult path and in a stubborn struggle against the obsolete elements it was essential to strengthen its discipline. "...Without this iron discipline," pointed out Lenin, "we could not have created the Red Army, we could not have withstood 2 years of fighting and generally could not have held out against organized, united capital."(2)

Military history knows many examples when the energetic restoring of order and discipline resurrected the army or military unit and restored its temporarily lost battleworthiness. Discipline helps for people to overcome fear, to check panic and create united collectives. A disciplined troop organism is close-knit and flexible, it is easier to command in combat and its combat readiness is always on a high level. In carrying out the will of commanders, well-organized collectives operate confidently, clearly and with coordination in a

combat situation, they steadfastly endure hardships and deprivations and win a victory over a strong enemy. With good reason it is said that "discipline is the mother of victory."

During the first stage of the organizational development of our Armed Forces, the toiling masses, primarily the workers, full of concern for defending the Soviet republic, volunteered for the ranks of the Red Army and Navy. They themselves endeavored to establish and maintain firm discipline and organization. At that time there still were no troop manuals. The command personnel did not have disciplinary rights. Discipline was achieved by the personal authority of the commissars and commanders, by their example in combat and by the self-awareness of the Red Armymen.

In the documents of those times there were many resolutions of the general assemblies of Red Armymen and which established the rules of conduct for the men in a unit and detachment, which emphasized the crucial role of discipline for achieving victory and which set punitive measures for those who violated the established order. The severest punishment was expulsion from the ranks of the Red Army.

In the summer of 1918, the organization of the Red Army commenced on the grounds of universal military service. The Decree of the 5th All-Russian Congress of Soviets in July 1918, emphasized: "The Worker and Peasant Red Army should be organized on the basis of iron revolutionary discipline. A citizen who has received weapons from Soviet power to defend the interests of the working masses must unfailingly obey the demands and orders of the commanders recognized by Soviet power."(3)

In April 1918, the VTsIK [All-Russian Central Executive Committee] approved the text of a military oath for the Red Army soldier, in November the Internal Service Regulations and Garrison Service Regulations, in December a Field Manual (Part 1) and in November, Disciplinary Regulations. The regulations systematized army life and helped to increase the combat readiness of the troops.

The decisions of the 8th RKP(b) [Russian Communist Party (Bolshevik)] Congress underlay the activities of the party and its bodies in the Armed Forces in strengthening military discipline. An enormous role was also played by the decrees and rulings of the 5th Congress of Soviets, the Council of People's Commissars [SNK] and the decisions of the party Central Committee which clearly defined the content of Soviet military discipline, established the ways for strengthening it and emphasized the role of discipline for achieving victory.

The commanders and commissars, the political bodies and all the communists constantly carried out the prescribed requirements and by all means instilled firm military discipline. They explained to the men the enormous importance of organization and order in the troops and conducted collective readings of newspapers and talks on the new military regulations. Special attention was paid to explaining the demands of the military oath and to popularizing the men who had distinguished themselves in fighting and their feats.

Enormous importance was given to indoctrinating the personnel and to strengthening conscious iron discipline and organization in the troops by the prominent leader of the Communist Party and Soviet state, one of the most talented organizers and leaders of the Red Army, M.V. Frunze. He himself was an example of discipline, organization and high exactingness for himself and for subordinates. Mikhail Vasilyevich felt that not to carry out the orders of a commander was the equivalent of committing the greatest crime to the motherland. He said that an awareness of the need to unswervingly, quickly and precisely carry out all official orders should be instilled in each Red Armyman, as it may happen that "the interests of the socialist fatherland demand from him a readiness to sacrifice everything, even his life, for the independence and victory of the worker-peasant state."(4)

Characteristic is the following example. On 26 December 1918, M.V. Frunze was appointed the commander of the 4th Army of the Eastern Front. Having studied the situation and the state of affairs in the army, he concluded that the combat readiness of the units and discipline in them were on a low level and there was no organization and clarity in executing the combat orders. The kulak and SR [Socialist Revolutionary] elements which had infiltrated the army had had a deleterious effect on the personnel. Political work with the men was carried out haphazardly.

Certain military specialists were of the opinion that it would be impossible to carry out an offensive with such an army and it was enough if it could keep its held positions. M.V. Frunze was of a different opinion. He believed in the working class and in the soldiers. In talking with the men and in carefully studying their proposals, Mikhail Vasilyevich became convinced that the instances of violating military discipline were most often caused by a misunderstanding of the principles of service and the relationships between superiors and subordinates. In an order to the army, M.V. Frunze pointed out: "...Modern discipline differs from the discipline of the previous army in the fact that, in being based not merely on a feeling of fear of responsibility and the related punishments, the discipline of the Red Army is founded chiefly on a high feeling of awareness of revolutionary duty.... Our army, charged with the carrying out of the great tasks entrusted to it by the Worker-Peasant government, should be a mighty force for all the enemies of the working population and this can be achieved only under the condition that all the army units are united by iron discipline."(5) The well thought-out and coordinated work of the commanders, the staffs and the commissars in strengthening discipline in the army bore fruit. A series of major victories was won in the march offensive of 1919.

Precisely discipline, the moral strength of the soldiers and commanders and an understanding of their duty and responsibility for the fate of the socialist motherland were the most important components in our victories over the forces of the external and internal counterrevolution during the years of the intervention and Civil War.

Mass heroism, steadfastness and high discipline were shown by the Soviet soldiers at the end of the 1930s in the fierce fighting against Japanese samurai in the area of Lake Khasan and on the Khalkhin-Gol River.

The squad commander A. Kulagin and his subordinates were amongst the first to bear the attack of the Japanese raiders. The courageous men drove off several fierce attacks but the enemy continued the pressure. At a critical moment in the fighting, the commander was severely wounded but he remained with his men. Under the bursts of Japanese grenades, Kulagin continued to fire accurately. His endurance, valor and high discipline were picked up by his subordinates. There were fewer and fewer of our soldiers, but not one of them flinched. They were able to hold the elevation until the arrival of reinforcements.

In a fierce clash with the Japanese aggressors, heroism was also shown by the commander of the 127th Rifle Regiment, Maj N.F. Grukhin. He was always where the fighting was heaviest. He could be seen in a hand-to-hand clash, behind a machine gun or with a grenade in hand. By his words and personal example, Grukhin inspired his men. The courageous commander perished but the difficult fight against superior enemy forces was won.

The Soviet people and their soldiers showed limitless dedication to the motherland and to the cause of the Leninist party as well as loyalty to Lenin's legacy with unprecedented strength during the years of the Great Patriotic War. During that difficult hour for the motherland, they showed high moral-political qualities, organization and discipline.

The military councils, commanders, political bodies, the party and Komsomol organizations based their work on indoctrinating high discipline and organization in the personnel on the ideas of V.I. Lenin and the instructions of the Communist Party. The Leninist thesis that "in order to win, there must be the greatest struggle, there must be iron, military discipline,"(6) became the core of this work. The main goal was to achieve a situation where each soldier profoundly understood what the importance of discipline was in combat and what was its role in achieving victory. This was particularly important at the initial period of the war, when our troops were retreating under the pressure of superior enemy forces.

Military discipline has constantly been at the center of attention of the commanders, the political workers, the party and Komsomol organizations. Systematically explained to the personnel was the essence and particular features of this discipline, its role in achieving victory over the enemy; the necessity of strictly carrying out the demands of the oath, the regulations, orders and instructions of the commanders and strengthening one-man command. The particular features of the situation developing on the front and the nature of the missions carried out by the troops were considered here.

Great attention was given to explaining the "Pamyatka krasnoarmeytsu" [Instructions for the Red Armyman] published in June 1941. This stated: "An army's strength is in its discipline. Strong military discipline is the guarantee for victory in combat. Be a disciplined soldier.... Sacredly carry out the military oath for loyalty to the motherland and to the Soviet government...."(7)

The Order of the People's Commissar of Defense No. 227 of 28 July 1942 was of exceptional importance for increasing the steadfastness of the troops during the days of the difficult defensive engagements and for indoctrinating high

personal responsibility in each soldier for the destiny of the motherland. This described the harsh truth of the dangerous situation which had arisen on the Soviet-German Front, it condemned the "retreatist" moods, it pointed to the necessity of stopping the enemy advance by any means and provided the strictest measures for anyone who showed cowardice, faint-heartedness or a lack of discipline in combat.

The order, in particular, stated: "It is essential to defend each position, each meter of Soviet territory, stubbornly, to the last drop of blood, to hold on to each piece of Soviet land and defend it until the last possibility.... In our army we should institute strictest order and iron discipline if we wish to rectify the situation and defend our motherland.... From now on the iron law of discipline for each commander, Red Armyman and political worker should be the demand: not a step back without orders from the superior command...."(8)

The effective activities of the military councils, the commanders, the political bodies, the party and Komsomol organizations in explaining the content of Order No. 227 to the men and indoctrinating them in a spirit of iron discipline produced good results. The force of the rebuff of the enemy grew stronger, order and organization grew stronger in the troops and the combat missions were carried out more effectively.

Even the start of the war had shown that the criminal plans of the Nazis were doomed to defeat. The Border Troops and the legendary defenders of the Brest Fortress stood to the death. Soviet tank troops fought intrepidly at Lutsk, Brody and Rovno. Our troops fought stubbornly in the regions of Liyepaya, Rava-Russkaya, Mogilev, Peremyshl and on the approaches to Borisov.

The heroic defense of the Hanko Peninsula and Naval Base lasted over 5 months. This was due to the high organization of the base's commander, Lt Gen S.I. Kabanov, the commander of the 8th Separate Rifle Brigade, Col N.P. Simonyak and the steadfastness of all the personnel. Here is what the newspaper PRAVDA had to say about the defenders of the Hanko Peninsula: "The decades will pass, the centuries will pass, but mankind will not forget how a handful of brave men and patriots of the Soviet land, without retreating a step before the numerous and heavily-armed enemy, under the continuous heavy artillery and mortar fire, and disdaining death for the sake of victory, set an example of unprecedented valor and heroism...."(9)

During the war years there were tens of thousands of such steadfast, courageous and valorous troops like the defenders of Hanko Peninsula. Love for the motherland and hate for its enemies, great combat skill and self-sacrifice were strengthened by their unity and organization, by their greatest discipline and efficiency. Nothing, even the threat of death, could prevent the heroes from carrying out the combat order because they saw in this the will of the motherland, the party and the people. Here we might give the following fact. In the presentation of state decorations to frontline veterans at the Kremlin, M.I. Kalinin asked one of those awarded, Hero of the Soviet Union Ignat Tsimbal, to share his ideas on how he became a hero. The soldier replied: "...I feel that it is entirely a question of discipline. It is just one step from discipline to heroism. Only I should say that our

discipline is not merely the execution of orders. It goes deeper. It is a love for the motherland, for the party, for the Soviet people. And it is not only love but rather the desire and ability to do everything required of you at each moment. And to do more.... Only with such discipline will we conquer the Nazis."(10)

Well known is the feat carried out during the war years by Capt G. Maslovskiy. In January 1944, the officer received the mission of destroying a large Nazi dump of bombs and artillery shells. He carried out the order with honor but himself died heroically. In a letter to his son written before leaving for the enemy rear, there were the following words:

"An hour ago I received a mission from which I shall not return alive.... I do not intend to reject such a mission, on the contrary, I burn with the desire to begin as quickly as possible. While waiting for the aircraft, my mind is full of restless thoughts, at a lightning speed I ask myself questions and immediately answer them. One of the first questions would be: What forces helped me carry out the courageous deed? Military discipline and party duty."(11) The testimonial letter clearly showed the inner forces which made it possible for the Soviet officer to carry out the feat and completely fulfill his military duty.

People of the older generation who have gone through the war are well aware that discipline is not merely external efficiency, upright conduct, it is not bravura in combat but rather a higher understanding of the need to set a personal example and to act boldly and decisively in any situation.

Proceeding from my own personal frontline experience, I would like to emphasize the great strength of loyalty to the military oath, to combat friendship and military comradeship -- this unvarying tradition of our army. These express the essence of the Soviet way of life in terms of military service, the spiritual elevation of the Soviet people indoctrinated by the party of communists in the ideas of loyalty to the duty of one's motherland and in the ideas of collectivism, friendship and mutual aid.

For everyone who followed the harsh paths of the war and who shared with his comrades in the trenches the last cartridge or dry crust, Suvorov's admonishment "perish yourself but help a comrade" was the standard of conduct and the rule of life.

Friendship, military comradeship and loyalty to the oath at present are the law of military service. Friendship and mutual aid on the battlefield demand not a separate noble rush but daily, constant self-indoctrination, the greatest efficiency and readiness to dedicate oneself completely to carrying out the order.

Conscious military discipline based on a profound communist conviction of the men in combat became a material force which largely aided the victory over the enemy and gave the soldier insurmountable strength which could stand up to any hardships.

The value of frontline experience is great. And not only from the viewpoint of tactics and operational art but also from the viewpoint of morality. During the war years, enormous experience was gained in ideological, party-political work and indoctrinating high discipline in the men. This experience is our priceless legacy which does not grow older and does not lose its importance.

As during the years of the Great Patriotic War, at present moral indoctrination is an important means for developing high discipline in the men as well as for developing their moral steadfastness and implacability against violations of the demands of Soviet laws, the oath and regulations.

The men are more disciplined in those units where the question of the ideological-political and moral indoctrination of the servicemen are inseparably tied to military indoctrination. There the young men with their heart and sole learn the undying truth that the glorious military deeds of the frontline veterans, the courage and steadfastness in the fight against the enemy were possible only with iron discipline, with strict observance of the oath, with the precise fulfillment of the commander's orders and loyalty to military, patriotic duty.

The communists and Komsomol members have always set the example of high efficiency and flawless service for the motherland. During the years of harsh testing, they were in the most difficult and crucial sectors of the struggle against the enemy. By their personal example, ardent word, by their organization and exemplary discipline they led their fellow servicemen to feats. And at present these qualities of the communists and Komsomol members are fully apparent, particularly in the daily, dedicated deeds of the soldiers carrying out their internationa duty in Afghanistan. Their service is complicated and crucial.

I recall a stirring moment when upon instructions of the USSR Ministry of Defense and the Main Political Directorate of the Soviet Army and Navy I was to present the Order of Lenin and the Gold Star to Capt V. Grinchak. He had earned the title of Hero of the Soviet Union for courage and heroism shown in carrying out his internacional duty in Afghanistan. The communist officer commanded a company. In one of the battles, while heavily wounded, he with his comrades fought all-out against the rebel band. By his personal example of courage and great organization he led his subordinates to an exemplary execution of the combat order.

Surviving without his legs, Capt Grinchak dreamed of returning to army life. He realized that he might not be fit and his combat experience might not be of use. He directed such a request to the USSR minister of defense. It was accepted. At present, Grinchak is serving in the Kiev Higher Combined-Arms Command School imeni M.V. Frunze.

It would be possible to give many examples of the unstinting actions of soldiers, sergeants, warrant officers ["praporshchik"] and officers who provided fraternal aid to the peaceful inhabitants suffering from the raids of armed bands sent from abroad.

At one of the tactical exercises, the soldiers from the subunit under the command of Officer A. Soluyanov, now Hero of the Soviet Union, in coming out in the "enemy" rear, happened upon the positions of a band moving to intercept an Afghan caravan with bread and medicines. The rebels caught the soldiers under heavy fire.

Having numerical superiority, they assumed that the Soviet soldiers would falter. However, our soldiers, courageous and valorous, organized and disciplined, were the victors in the fierce clash. Soldier unity was also of important significance.

Widely known in our country are the names of the Officers V. Shcherbakov, S. Kozlov, R. Aushev, I. Ploskonos, G. Kuchkin and others who were awarded the title of Hero of the Soviet Union for heroism and courage shown in carrying out their international duty.

Courage, self-sacrifice and great discipline were demonstrated also by our troops in eliminating the consequences at the Chernobyl Nuclear Plant. They faultlessly carried out the mission given them.

The strengthening of discipline and organization is a question of state importance. We are the witnesses of the enormous efforts being made by our party and its Central Committee at the greatest possible strengthening of socialist discipline in the nation as a most important condition for successfully carrying out the plans for economic and social development, for further strengthening the foundations of the socialist way of life and for increasing the labor and political activeness of the masses. These demands permeate the decisions of the 27th Party Congress and the speeches of the General Secretary of the CPSU Central Committee, Comrade M.S. Gorbachev. "The development of the people's creativity, a greater responsibility for the job on hand, the strengthening of discipline and order in the nation are most closely tied to two such important matters as the development of democracy in the nation and the further ensuring of the principles of social justice,"(12) commented Comrade M.S. Gorbachev in a speech at a meeting of the aktiv of the Khabarovsk Kray Party Organization on 31 July 1986. The policy worked out and consistently carried out by the Central Committee of strengthening discipline in all spheres of our society's life has gained nationwide support.

And while such an approach is important for all our nation, for the Soviet Armed Forces it is vitally essential, for discipline is the foundation of the combat readiness of the troops and fleet forces and a decisive condition for achieving victory in combat. V.I. Lenin taught that discipline and firm organization should be in the view of the party and be a matter of its special concern: "Intense military preparations for a major war require not a rush, not a shout, not a combat slogan, but rather extended, intense, stubborn and disciplined work on a mass scale."(13)

The Communist Party and the Soviet government have pointed to the growing importance of military discipline, organization and order for increasing the combat potential of the Soviet Armed Forces and for carrying out the historic mission entrusted to them.

The necessity of strengthening such a factor as military discipline in the combat might of the Armed Forces at the present stage has been brought about by the increased military preparations of the militarist circles of the United States and the other NATO countries against the USSR and our allies and this demands on the part of the Soviet military constant readiness to check any aggression from wherever it might originate.

The increased role of discipline is also related to the ongoing outfitting of the Army and Navy with new military equipment. Certainly the slightest inefficiency or negligence on the part of a soldier or sailor in preparing and employing the modern collective types of weapons can lead to a failure to carry out the combat mission. This is the case in combat. But in peacetime, strong discipline and organization are the basis of order and exceptional clarity in maintaining and operating the equipment and weapons.

In their activities the commanders, political workers, the party and Komsomol organizations also take into account that with the appearance of nuclear missile weapons, the content of military discipline has been significantly broadened and has become more all-encompassing and deeper. In the practices of daily service, such concepts as the discipline of alert duty, the discipline of time, the discipline of operating equipment and weapons, the discipline of personal and collective responsibility of the men for carrying out the set missions have come to hold a strong place. They undoubtedly must be viewed as a single whole determining the degree of discipline of the personnel.

The main areas of organizational, ideological and massed political work and the tasks which the party organizations, the leadership and all the Soviet people must concentrate on have been set out by the 27th Party Congress and by the June (1986) Plenum of the CPSU Central Committee. One such task is a further rise in organization, order and discipline.

The specific ways of struggling to strengthen discipline and order as major conditions for a further rise in the vigilance and combat readiness of the troops and naval forces and for achieving victory in modern combat have been set out in the decisions of the CPSU Central Committee, in the theses and conclusions found in the speeches of the General Secretary of the CPSU Central Committee, Comrade M.S. Gorbachev, on defense questions as well as in the orders and directives of the USSR minister of defense and the chief of the Main Political Directorate of the Soviet Army and Navy.

In the Ground Forces, as in all our Army and in the Navy, there are many units where they have eradicated crimes, accidents and major disciplinary infractions. The high level of discipline, the organization and solidarity of the personnel serve as a strong basis for the men to achieve high results in combat and political training. Among those which have completely fulfilled the socialist obligations assumed in honor of the 27th CPSU Congress are the troop collectives where Officers A. Grigorash, L. Zadorozhnyy and G. Ivoylov serve as well as many other units and subunits.

In this context I would also like to say that the commanders, political workers, the party and Komsomol organizations must more effectively commend

the leading, disciplined soldiers who are direct participants in the struggle to achieve new heights in combat training, who are creators of advanced experience and show constant concern for encouraging the military service of the servicemen.

In carrying out the demands of the CPSU Central Committee, the USSR minister of defense and the chief of the Main Political Directorate of the Soviet Army and Navy on strengthening military discipline, it is hard to overestimate of the role of the personal example of the leaders and all officer personnel. True authority of each of them does not come automatically with the appointment to one or another position. This is won by hard work, by great exactingness on oneself and subordinates, by closeness to the men, by honesty and flawless discipline.

The 27th CPSU Congress proposed grandiose plans for accelerating the nation's socioeconomic development. At the same time, it demanded the adoption of effective measures to strengthen demands and to raise organization, discipline and order. This applies to all Soviet people and particularly to the men of the Army and Navy.

Unfortunately, not all the commanders, staffs and political bodies everywhere organize their work in the spirit of the times. Some of them have not been sufficiently fast in reorganizing their activities in accord with the present demands of the party. Commanders and political workers are still encountered for whom exactingness, strict demandingness and concern for subordinates have not become a standard of everyday life.

"A law in the life of the Army and Navy," emphasized the USSR Minister of Defense, MSU S.L. Sokolov, at a reception in the Kremlin in honor of the military academy graduates on 30 July 1986, "is the unswerving observance of the demands of the military oath, the regulations and orders of commanders. It is essential to constantly instill and everywhere maintain proper order in all Army and Navy life."(14)

The men of the Army and Navy are working with great patriotic zeal. They have accepted the decisions of the 27th CPSU Congress with profound satisfaction and unanimous approval. The men are responding with new successes in training and service to the concern of our Leninist party for strengthening the economic and defense might of the motherland. They are fully aware of the enormous responsibility for ensuring the security of the fatherland and are making every effort in the future to steadily increase vigilance and combat readiness, discipline and organization -- those important factors for achieving victory in modern combat.

FOOTNOTES

1. "Programma KPSS: Novaya redaktsiya" [CPSU Program: New Version], Moscow, Politizdat, 1986, p 49.

2. V.I. Lenin, PSS [Complete Collected Works], Vol 40, pp 117-118.

3. "Dekrety Sovetskoy vlasti" [Decrees of Soviet Power], Moscow, Gospolitizdat, Vol II, 17 March-10 July 1918, 1959, p 543.

4. M.V. Frunze, "Izbrannyye proizvedeniya" [Selected Works], Moscow, Voyenizdat, 1984, p 514.

5. Ibid., Vol 1, 1957, pp 141-142.

6. V.I. Lenin, PSS, Vol 40, p 220.

7. TsAMO SSSR [Central Archives of the USSR Ministry of Defense], folio 41, inv. 920265, file 3, sheet 93.

8. "Istoriya vtoroy mirovoy voyny 1939-1945" [History of World War II of 1939-1945], Moscow, Voyenizdat, Vol 5, 1975, pp 166-167.

9. PRAVDA, 13 November 1941.

10. S. Borzenko, "Povinuyas zakonam Otechestva" [Obeying the Laws of the Fatherland], Moscow, Khudozhestvennaya literatura, 1943, p 191.

11. "Govoryat pogibshiye goroi" [The Fallen Heroes Speak], Moscow, Politizdat, 7th Supplemented Edition, 1982, pp 214-215.

12. PRAVDA, 2 August 1986.

13. V.I. Lenin, PSS, Vol 36, p 325.

14. PRAVDA, 31 July 1986.

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EXPERIENCE OF MANEUVERING FOR CONCENTRATING EFFORTS AGAINST ENEMY ASSAULT GROUPINGS IN COURSE OF FRONT DEFENSIVE OPERATION

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 9, Sep 86 (signed to press 26 Aug 86) pp 12-23

[Article by Candidate of Military Sciences, Docent, Lt Gen A.I. Yevseyev, published under the rubric "Soviet Military Art"]

[Text] In the course of the Great Patriotic War, the defensive held an important place in the military operations of the Soviet Armed Forces. Here in a majority of instances, particularly during the first period, this was carried out on a broad front and with limited forces. At the same time, the Nazi Command concentrated large groups of troops, including the basic mass of tank and motorized formations, on selected axes of advance, and this made it possible for it to establish a significant superiority in men and weapons. Thus, at the moment of the treacherous attack on our nation, on a number of sectors of the Soviet-German Front, the enemy surpassed the Soviet troops by 3-4-fold in personnel and equipment, and on the sectors of its main thrusts where compact assault groupings were organized, this superiority was even higher. On the southern face of the Kursk Salient in July 1943, with an overall superiority on the side of the Voronezh Front, the Wehrmacht Command on the main axis of the initiated offensive (in the defensive zone of the 6th Guards Army) had established a superiority of 1.8-fold in personnel, 1.3 in guns and mortars and 6.4-fold in tanks.(1)

In those instances when the superiority established in men and weapons made it possible for the enemy to launch powerful initial attacks, to drive deeply into the defenses of the Soviet troops and sometimes break through them and develop the offensive in depth, the combating of the enemy assault groupings assumed extremely important significance. Not only the course but also to a definite degree also the outcome of the defensive engagements depended largely upon the successful carrying out of this task. The holding of the occupied lines by the defending troops and the defeating of the enemy assault groupings required the extensive maneuvering of men and weapons to the threatened axes and this was convincingly affirmed by the experience of the defensive operations conducted by the fronts during the various periods of the war.

At the start of the war, regardless of the stubborn resistance by the formations of the 5th and 6th Armies of the Southwestern Front covering the

sector of Lutsk, Kiev, by the end of 22 June 1941, the Nazi troops had been able to advance 25-30 km. There was a threat of a deep breakthrough by the enemy and the outflanking of the main forces of the front to the north. In the aim of defeating the enemy assault grouping, the commander of the front, Col Gen M.P. Kirponos, decided by maneuvering to concentrate the IV, VIII, IX, XV, XIX and XXII Mechanized Corps and the XXXI, XXXVI and XXXVII Rifle Corps which were in the reserve of the armies and the front on the axis of advance of the 1st Panzer Group, to launch a powerful counterstrike and eliminate the created threat. However, there was not enough time allocated for concentrating the reserves being moved up from the interior and for organizing the counterstrike. In the morning of 26 June, at the moment the mechanized corps under the front were reaching the designated areas, the rifle corps were still on the march while the IV and XXII Mechanized Corps were involved in extended combat with the enemy troops which had broken through. Under the arising conditions, only the VIII, IX, XV and XIX Mechanized Corps were actually involved in the counterstrike (Diagram 1).

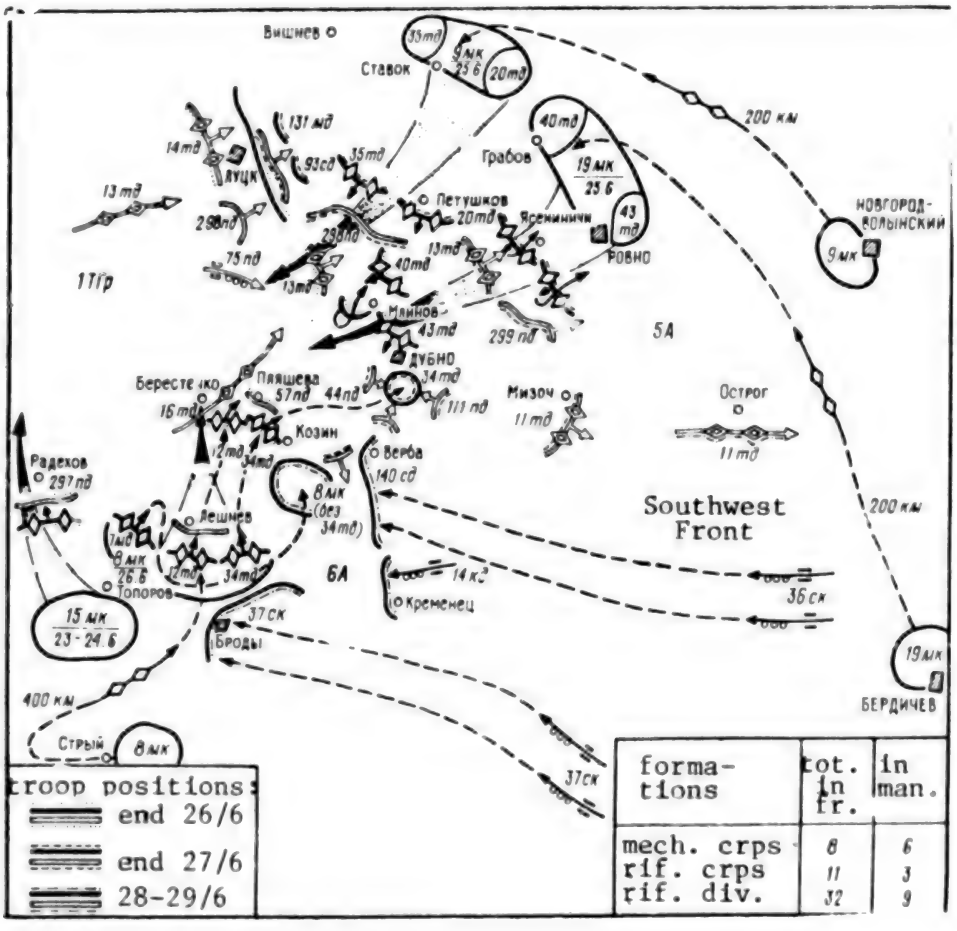


Diagram 1.
Maneuvering Men and Weapons in Defensive of Southwestern Front (June 1941)

From 26 through 29 June, one of the major meeting engagements in the initial period of the Great Patriotic War developed in the area of Lutsk, Brody, Rovno. Although for a number of reasons the units and formations of the mechanized corps were unable to carry out the given mission of encircling and destroying the enemy 1st Panzer Group, the results of the counterstrike were of great importance for the troops of the Southwestern Front. By active operations against the enemy assault grouping, it was possible to hold up its advance for an entire week, to cause it significant losses and thwart the plans of the Wehrmacht Command to encircle the front's main forces on the Lwow Salient.

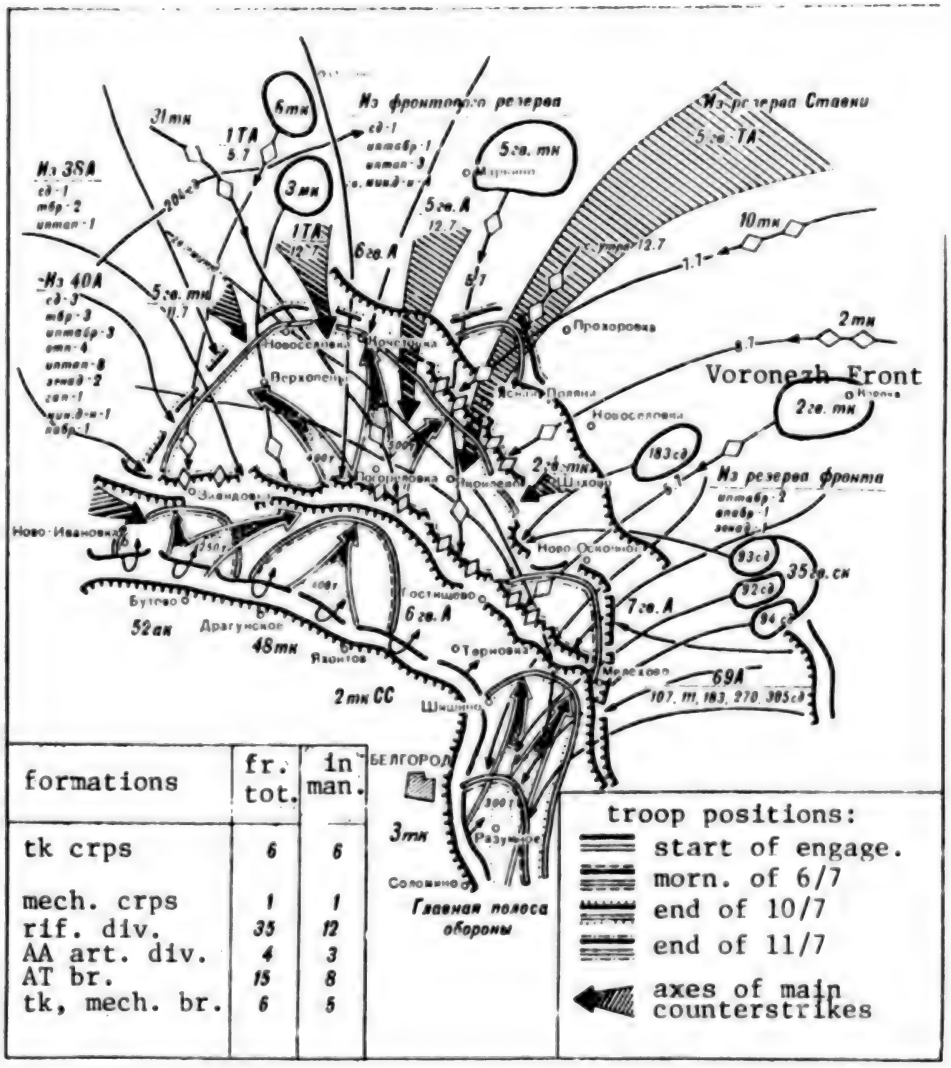
Under difficult conditions a defensive engagement was carried out by the Western Front in November 1941 on the near approaches to Moscow. As a consequence of the suffered losses, the armies were unable to establish the necessary depth of the operational defenses while the front reserves were sparse. But the Nazi Command with the established assault groupings was endeavoring at whatever the cost to outflank Moscow and capture it.

At the end of November, on the right wing of the front the 3d and 4th Enemy Panzer Groups had broken through to the north and northwest while the left wing had been deeply enveloped by formations of the 2d Panzer Army which had continued an offensive on the axis of Tula, Venev, Kashira. In order to halt the further advance of the Nazi assault groupings and defeat them, the commander of the front, Army Gen G.K. Zhukov, carried out a bold maneuver and quickly concentrated the men and weapons at his disposal on the threatened axes. The 17th, 18th, 24th and 44th Cavalry Divisions were quickly moved up from the interior and from other sectors of the front into the area of the 16th Army on the Volokolamsk-Klin axis. The II Cavalry Corps was regrouped from Serpukhov to the Venev area and the 9th Tank Brigade from Podolsk. On 27 November, these formations launched a counterstrike at the tip of the enemy assault grouping to the southeast of Moscow and by the beginning of December had thrown the enemy troops back a significant distance.

In the course of the subsequent defensive operations, the art of the commanders of the operational field forces in organizing and carrying out a maneuver in the aim of concentrating efforts against the enemy assault groupings continued to improve. This was clearly demonstrated by the actions of the Soviet troops in the Battle of Kursk.

In planning the offensive on the southern face of the Kursk bulge in the summer of 1943, the Nazi Command planned to crush the defenses of the Voronezh Front with a powerful tank fist. On a sector of 114 km, the enemy had concentrated in the assault grouping some 14 divisions, including 8 tank. For every kilometer of front in the zone of the 6th Guards Army the enemy had up to 3,000 soldiers and officers and 42 tanks and on individual sectors, up to 100 tanks.(2)

The engagement on the Voronezh Front commenced simultaneously on two relatively independent axes. In endeavoring to break through to Kursk, the Nazi Command launched its main thrust along the Belgorod-Oboyan Highway and an auxiliary one against Korocha (Diagram 2).



formations	fr. tot.	in man.
tk crps	6	6
mech. crps	1	1
rif. div.	35	12
AA art. div.	4	3
AT br.	15	8
tk, mech. br.	6	5

Diagram 2.
Maneuvering of Men and Weapons in the Course of the Defensive Operation of the Voronezh Front (July 1943)

By the end of the first day, 5 July 1943, at a price of enormous losses the enemy had succeeded in breaking the integrity of the first defensive zone of the 6th Guards Army and the fighting on this sector assumed crucial significance. In the arising situation the commander of the Voronezh Front, Army Gen N.F. Vatutin, took a decision to move up from the reserve the 1st Tank Army, the II and V Guards Tank Corps and the 93d Rifle Division to the axis of advance of the main enemy grouping, by a stubborn defense on the second defensive line to bleed the advancing troops white, to prevent the widening of the breakthrough in depth and toward the flanks and then by launching a counterstrike, to complete the defeat of the enemy.(3) During the night of 6 July, these forces reached the designated lines and together with the formations of the 6th Guards Army during the day drove off up to eight enemy troop attacks and were able to hold the second defensive line.

The 111th and 270th Rifle Divisions of the 69th Army and the 92d and 94th Guards Divisions of the XXXV Guards Rifle Corps were moved up from the second echelon of the front opposite the assault grouping advancing on the Korocha axis. The 192d Tank Brigade from the 38th Army was moved up into the defensive area of the 40th Army to prevent a breakthrough by the enemy troops to the northwest.(4)

In the course of the intense fighting on the Oboyan axis, during the period from 5 to 9 July, the following units were moved up: a tank army, four separate tank corps, four rifle divisions, an antitank artillery brigade, three antitank artillery regiments and four guards mortar (rocket launcher) battalions from the reserve of the front, a rifle division, two tank brigades, two tank regiments, an antiaircraft artillery division, an antitank artillery brigade, four antitank artillery regiments, a cannon artillery regiment and a guards mortar regiment from the 40th Army; a rifle division, a rifle brigade and an antitank artillery regiment from the 38th Army. The main air forces of the front were concentrated on this same sector. During this period the full 69th Army, two rifle divisions of the XXXV Guards Corps, two antitank artillery brigades, one cannon artillery brigade and an antiaircraft artillery division were moved up from the reserve of the front opposite the enemy second assault grouping advancing on the Korocha axis.(5)

Due to the extensive and prompt maneuvering in the aim of concentrating efforts against the assault groupings, the balance of forces on the Oboyan and Korocha axes changed sharply in favor of the Voronezh Front, the enemy was bled white and was forced on 10 July to abandon a further offensive with the main forces. Now the Nazi Command decided to crush the resistance of our troops with a powerful thrust by its tank grouping and to break through to Kursk via Prokhorovka. For the attack from the west it had concentrated a grouping numbering up to 500 tanks; for the offensive from the south it employed the main forces of the III Panzer Corps (around 300 tanks).

In order to parry the attack being prepared, to defeat the main grouping of Nazi troops and achieve a final turn in the course of the engagement, the commander of the front decided on the morning of 12 July to launch a strong counterstrike. The 5th Guards Tank Army and a portion of the forces of the 5th Guards Army which had been moved up from the reserve of Headquarters, launched an attack from the Prokhorovka area against Yakovlevo. The 1st Tank Army and a portion of the forces of the 6th Guards Army launched an attack from the northwest against Yakovlevo.(6) In preparing the counterstrike, by maneuvering the 6th Guards Army was additionally strengthened with two rifle divisions from the 40th Army and one rifle division from the 1st Tank Army.(7) In the course of the meeting engagement, the advancing enemy grouping suffered major losses and the Nazi Command was forced to break off the offensive on the Prokhorovka axis and abandon further attempts to break through to Kursk from the south.

Thus, as a result of skillful and flexible maneuvering on all axes where the assault groupings of Nazi troops were advancing, men and weapons were concentrated capable of countering the strong enemy attacks. In the course of the entire defensive engagements, the enemy troops did not succeed in breaking

through the operational defenses of the front on a single sector. In driving into our defenses, the Nazis everywhere encountered new defensive lines already occupied by the troops. The prompt moving up of the 5th Guards Tank Army and the 5th Guards Army from the reserve of Headquarters made it possible not only to halt the advance by the Nazi troops in the Prokhorovka area but also to launch a powerful counterstrike and then without a significant pause to commence offensive actions.

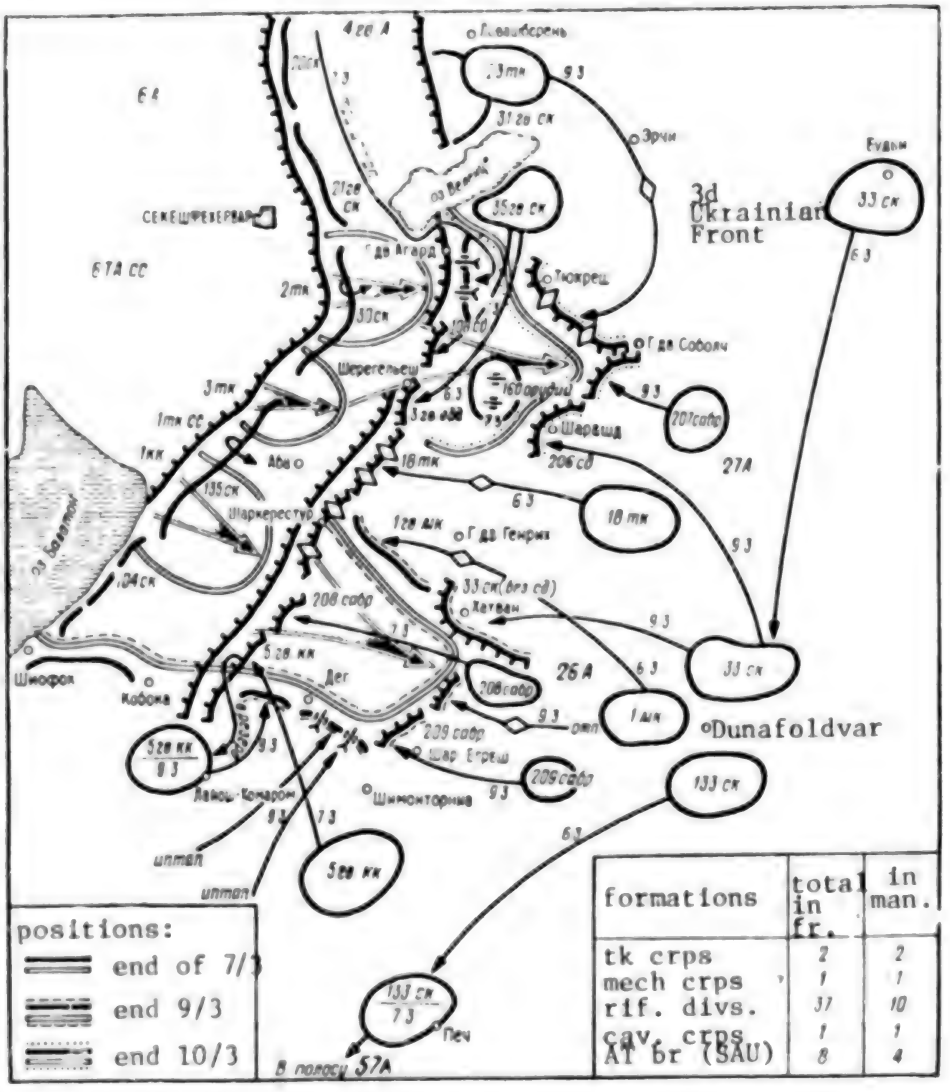


Diagram 3.
Maneuvering to Threatened Axes in the Course of the Balaton Defensive Operation (March 1945)

The Balaton Defensive Operation (Diagram 3) provided very instructive experience in organizing and carrying out a maneuver in the aim of concentrating efforts against the advancing enemy assault groupings. A particular feature of it was that the 3d Ukrainian Front (commander, MSU F.I. Tolbukhin) was forced to conduct a defensive engagement simultaneously on two

remote axes. Under these conditions a quick and promptly executed maneuver of men and weapons to the threatened axes was of crucial significance in organizing the successful repelling of attacks by superior Nazi forces.

The enemy unleashed its main attack against the front's troops in the morning of 6 March on the sector between Lakes Velence and Balaton. Going over to the offensive were major forces of the SS 6th Panzer Army and the 6th Army with strong air support. A threat of a breakthrough arose. In the aim of stiffening the defenses of the rifle formations in the area of the 26th Army, upon orders of the front's commander the XVIII Tank Corps and I Guards Mechanized Corps were moved up from the reserve to the threatened sector. The main aviation efforts of the 17th Air Army were also concentrated here.

Over 6 March, to the south of Lake Velence, the enemy succeeded in pushing 3-4 km into our defenses. The commander of the 26th Army moved up the 21st Rifle Division which was in the reserve to the second defensive line on the axis of advance of the enemy main grouping and made it part of the XXX Rifle Corps. The 108th Rifle Division, and one regiment each from the 78th and 136th Rifle Divisions of the 27th Army were moved up to the prepared army defensive line. Upon instructions of the front commander, the 110th and 170th Brigades of the XVIII Tank Corps were regrouped to an area to the southeast of Seregeljes. The 3d Guards Airborne Division of the XXXV Guards Rifle Corps and a tank regiment were shifted here from the second echelon of the front. The 122d Rifle Division of the XXX Rifle Corps was moved by rail to the Pecs area. The 84th Rifle Division from the CXXXIII Rifle Corps was moved by motor transport into the area of the 1st Bulgarian Army while the XXXIII Rifle Corps was concentrated in the Dunafoldvar area ready for actions according to the situation.(8)

From the morning of 7 March and on subsequent days the Nazi Command with strong tank wedges endeavored to break through the defenses of the Soviet troops on the central sector of the front. Attacking simultaneously between Lakes Velence and Balaton were from 170 to 450 tanks and assault guns as well as strong enemy infantry forces on armored personnel carriers. In the aim of strengthening our troops on the axis of advance of the enemy assault grouping, upon orders of the front commander, the formations of the second echelon of the 27th Army were moved up to the second defensive line to the south of Lake Velence. Two divisions from the XXXIII Rifle Corps were concentrated in the Dunafoldvar area. To the east of Seregeljes, the firing positions were held by an artillery group organized upon orders of the front artillery commander and consisting of 160 guns and mortars.(9)

In committing fresh forces to battle on a narrow sector of the front, the enemy on 9 March was able to break through the main and second defensive lines defended by formations from the CXXXV Rifle Corps. Having assessed the danger of the developing situation, the commander of the front moved up into the area of the 27th Army the XXX Rifle Corps, the 206th Rifle Division of the XXX Rifle Corps, the 207th Self-Propelled Artillery Brigade and the XVIII Tank Corps. The XXIII Tank Corps was regrouped from the defensive area of the 4th Army into the Dunafoldvar area. The 26th Army received the XXXIII Rifle Corps (minus one division) while the 209th Self-Propelled Artillery Brigade, a tank

regiment and two antitank artillery regiments were moved up to a line to the south of Cece.(10)

As a result of the maneuvering, the balance of forces changed on the axes of the enemy attacks in favor of the defending troops. Encountering stubborn resistance, the enemy was forced to break off further offensive actions and by the end of 15 March had gone over to the defensive. On no sector of the front were the Nazi troops able to continue the offensive in depth and reach the Danube.

* * *

A brief review of the experience of maneuvering forces in the aim of concentrating efforts against enemy assault groupings in what we consider to be the most characteristic defensive operations by the fronts makes it possible to draw certain generalizations.

First of all, the maneuvering of forces to the threatened sectors along with the engineer organization of the terrain, the stubborn resistance and steadfastness of the troops was one of the crucial factors ensuring the successful carrying out of the tasks of the defensive operation. By maneuvering to the sectors of action of the enemy assault groupings, the balance of forces was altered in favor of the defending troops, stable defenses were achieved and this to a definite degree compensated for the shortage of men and weapons.

The carrying out of a decisive and prompt maneuver in the aim of concentrating efforts against advancing enemy groupings in the course of the defensive engagements became an indicator of the military mastery of all levels of commanders. The principle of massing men and weapons on threatened sectors on the defensive was actually embodied in the maneuver.

At different stages in the defensive operation of a front, the maneuvering of forces to threatened sectors was carried out in the interests of realizing various tasks.

At the start of a defensive engagement, when the enemy assault groupings still had their defensive capabilities, the defending troops endeavored to prevent the development of the breakthrough, to consolidate the defensive front, to increase its depth, to securely cover the boundaries and flanks and to localize the developing breakthrough. This was achieved primarily by moving up reserves to the axes of advance of the Nazi troops and these reserves, as a rule, occupied previously prepared defensive lines (zones) or alternate positions. For example, in the Balaton Defensive Operation the front reserves, including two tank corps and a mechanized corps, three self-propelled artillery brigades as well as a second echelon army were basically employed for reinforcing the first echelon troops.

Subsequently, maneuvering to threatened sectors was carried out in the aim of checking the development of an offensive by enemy assault groupings and for maintaining the integrity of the operational defensive front. Building up the forces and stubborn resistance by the defending troops led to the exhaustion

of the enemy's offensive capabilities. As a result, favorable conditions arose for the troops of a front to launch a strong counterstrike or go over to the offensive. The maneuvering of forces in the course of the defensive operation by the Voronezh Front in July 1943 was of this sort.

In a number of instances the maneuver was carried out in the aim of changing a previously established troop group to the defensive, improving the operational position of the troops and establishing reserves using the forces of secondary sectors and strengthening the armies with front reserves.

An analysis of the data given in the diagrams shows that in the course of the examined front defensive operations, up to 100 percent of the tank and mechanized corps, 27-34 percent of the rifle divisions, over 80 percent of the separate tank brigades and up to 50-55 percent of the artillery formations and units were involved with the purpose of concentrating the efforts opposite the enemy assault groupings.

In concentrating the efforts of the defending troops opposite the enemy assault groupings, most characteristic was a maneuver from in depth and this was carried out by the second echelons and the reserves of the armies and fronts. The carrying out of such a maneuver was favored by the circumstance that there were significant forces in the second echelons and reserves. Thus, of the 35 divisions of the Voronezh Front, 18 made up the second echelons and reserves of the operational field forces. There were also a tank army and separate tank corps in the second echelon of the front.

Characteristically, in the defensive zones of the Voronezh and Third Ukrainian Fronts, the forces were simultaneously maneuvered to the sectors of the main and auxiliary enemy thrusts. Here in all instances the main efforts were concentrated primarily against the main enemy assault groupings. With the shifting of the main thrust by the Nazi Command to a new sector, the main efforts of the front were concentrated here. For example, when the enemy shifted the attack from the Oboyan to the Prokhorovka axis, the command of the Voronezh Front concentrated all of the reserves available to it to defeat the enemy grouping advancing on Prokhorovka.

Along with the maneuver carried out by moving up troops from the interior, in the course of the defensive operations there were also maneuvers along the front. During the first period of the war, these were employed comparatively rarely. This was explained by the fact that the first echelon formations and field forces of the fronts were, as a rule, tied down by the advancing enemy troops, there was still a certain fear of stripping the unattacked sectors and in addition the maneuverability of the rifle formations was low. Subsequently, with an improvement in the technical level of the troops and with the gaining of combat experience, this type of maneuver began to be carried out more widely. However, it was carried out, as a rule, only after the offensive enemy troop grouping had been clearly determined and the axis of its main thrust ascertained.

As a rule, a maneuver along the front involved formations and units taken away from sectors of the front where the enemy was showing less activity or had not undertaken an offensive. The most indicative was the maneuvering of forces in

the zone of the Voronezh Front. Regrouped from the 38th and 40th Armies into the defensive area of the 6th Guards Army where the main enemy grouping was advancing, during the period from 6 through 12 July were: four rifle divisions and two antiaircraft artillery divisions, four tank brigades, two antitank artillery brigades and a cannon artillery brigade, two separate tank regiments, five antitank and howitzer artillery regiments, a guards mortar battalion as well as certain other units.

A maneuver along the front was usually not envisaged in the operation's plan and the need for this arose in the course of the defensive operation. In this instance the commander of the front took a decision to remove formations and units from an army and regroup them on new sectors. Such a maneuver had to be organized and carried out in an extremely limited time and under extremely difficult conditions.

In the aim of defeating a large enemy troop group, strategic reserves were also maneuvered to the threatened sector. Thus, under conditions when there was a threat of the enemy's breakthrough on the Prokhorovka sector, Headquarters reinforced the Voronezh Front with the 5th Guards Tank Army and the 5th Guards Army and these were moved up from the Steppe Military District into the area to the northwest and north of Prokhorovka.

As was shown by the experience of the defensive operations of the fronts, the tank and mechanized formations and units were the main means of maneuvering. In possessing great mobility, they could be moved up more quickly than the other branches of troops to threatened sectors and most successfully counter the offensive of the enemy assault groupings which consisted primarily of tank and motorized formations. Starting in the summer of 1942, not only tank and mechanized corps but also tank armies (the Stalingrad and Kursk Battles) were employed for maneuvering in the aim of concentrating efforts opposite the enemy assault groupings in the course of the defensive engagements. The presence of mobile formations and field forces made it possible for the front's commander to mass the resources on the threatened sectors more rapidly and decisively and to more boldly employ forces from unattacked sectors in carrying out the maneuver.

Artillery was widely employed in maneuvering in the course of the defensive operations. In the Battle of Moscow, when the mechanized corps had already been broken up, the armies covering the shortest routes to the capital were constantly reinforced with artillery units. Thus, at the end of November, around 20 artillery regiments and up to 12 rocket artillery battalions had been concentrated in the zone of the 16th Army.(11) The maneuvering of artillery to threatened sectors underwent even greater development in the subsequent defensive operations of the fronts. For example, on 9 March 1945, when the fighting against the enemy assault grouping assumed a particularly fierce nature to the south of Lake Velence, the command of the front additionally deployed on this sector a cannon brigade, a howitzer artillery brigade and a heavy mortar brigade, three cannon regiments, two antitank artillery regiments, six self-propelled artillery regiments, two mortar and three antiaircraft artillery regiments.(12) By maneuvering the artillery from the interior and removing it from unattacked or less important sectors of the defenses, it was possible to quickly bracket the advancing enemy assault

groupings and increase the density of the artillery on the threatened sectors up to 60-80 guns and mortars per kilometer of front.

As the axes of the main enemy groupings were determined, the divisional and then the corps and army antitank artillery reserves were committed to battle and these consisted of antitank and self-propelled artillery units and formations.

The maneuvering of man-made obstacle facilities assumed great importance in concentrating efforts against the enemy assault groupings in the defensive operations. The maneuvering of mobile obstacle construction detachments was employed particularly widely and these set explosive obstacles on the discovered enemy axes of attack and together with the antitank reserves they quickly bracketed the breakthrough sectors of the enemy troops and this contributed greatly to checking their further advance.

Aviation was one of the chief maneuvering forces ensuring the rapid concentration of efforts on threatened sectors in the course of defensive engagements of the fronts. In order to check the advance of the main enemy assault grouping, the command of the Voronezh Front, for example, concentrated virtually all the formations of the 2d Air Army on the Oboyan axis and by the orders of Headquarters aviation of the 17th Air Army of the Southwestern Front was used on the Korocha axis. The main efforts of the ground attack and bomber aviation were directed primarily at destroying the tank groupings endeavoring to breach the defenses of our troops. In the Balaton Operation the main air efforts were concentrated on destroying the enemy assault groupings which had broken deep into the front's defenses.

The maneuvering of air defense forces to threatened sectors was carried out chiefly by shifting antiaircraft artillery formations and units from the reserve and from unattacked sectors to cover the front's groupings repelling the offensive by the main enemy forces against enemy air strikes. For example, for strengthening organic air defenses on the Oboyan sector, by orders of the commander of the Voronezh Front, two antiaircraft battalions were shifted from the area of the 40th Army while one antiaircraft battalion was moved up from the front reserve to the Korocha sector.

An examination of the designated defensive operations provides grounds to conclude that the task of defeating the enemy assault groupings was successfully carried out only in the instance that the pace of maneuvering the front's troops being moved up to the threatened sectors was higher than the enemy rate of advance. In light of this one of the major reasons for the unsuccessful outcome of the meeting engagement in the area of Lutsk, Brody and Rovno in June 1941 must be seen in the slow moving up and delayed concentration of the mechanized and rifle corps of the Southwestern Front assigned to launch the counterstrike. Conversely, the success of carrying out the mission of defeating the enemy assault groupings in the defensive engagements of the Voronezh and Third Ukrainian Fronts was largely determined by the fact that the rate of maneuvering the forces was higher than the enemy rate of advance. This made it possible for the Soviet troops in a short period of time to rapidly establish the necessary superiority in forces on the

breakthrough sectors and deprive the enemy of the possibility of developing the offensive in depth.

The experience of the defensive operations indicates that the greatest success in maneuvering forces to threatened sectors was achieved with deliberate preparation and all-round support for the maneuver. Here the preparatory measures were carried out most completely with the intentional going over to the defensive by the troops of the front and with the availability of sufficient time. The commander of the front in this instance, in adopting the plan for the operation, depending upon the possible nature of enemy operations, designated on what sector and at what time the efforts of the second echelons and reserves must be concentrated, he determined the aim of the concentration, the strength of the forces, their tasks, deployment lines, the procedure for moving up to them and the probable methods of action, and issued instructions on organizing artillery, air, engineer and logistic support for the troops involved in the maneuver. All these measures were reflected in the plan of the defensive operation.

For example, the maneuvering of forces was carefully planned in the aim of concentrating efforts on the sectors of the probable actions of the enemy assault groupings in the Balaton Operation. Considering the probable axes of the enemy strikes, the possible variations of maneuvering were set in the forthcoming defensive engagement. In the event that the enemy launched its main thrust to the northwest of Lake Velence, the XXXI Guards Rifle Corps was to be deployed on the previously prepared line. With the threat of a breakthrough through the area of the 4th Guards Army, the XXXIII and XXXV Guards Rifle Corps and the XXIII Tank Corps, an antitank artillery brigade and two antitank artillery regiments were to be moved up to this sector from the front's reserve. The maneuvering of forces in the defensive zone of the front was planned in detail in the event of an offensive by the main Nazi forces between Lakes Velence and Balaton as well as to the south of Lake Balaton.(13)

With the start of the defensive engagement, the commanders of the fronts, depending upon the developing situation, either made the necessary changes in the initial plan or merely adjusted it.

Of great importance in the successful concentration of forces on threatened sectors was the concealment of its preparations and implementation and this was achieved by carrying out a series of measures. As a rule, the troops moved up to the deployment line at night. Full use was made of the camouflage properties of the terrain. Troops involved in the maneuver were securely covered by air defenses during daylight. The routes for moving up were prepared ahead of time in engineer terms. in the course of the move-up, the demands of covert troop command were strictly observed.

* * *

The experience of the Great Patriotic War convincingly indicates that even under conditions where the enemy had significant superiority, by the prompt and skillful maneuvering of forces in the course of the defensive engagements, the defending side could achieve changes in the balance of forces on crucial

sectors and not only halt the enemy offensive but bring about its complete defeat.

Under the conditions of the employment of new weapons and the saturating of the troops with diverse modern equipment, defensive operations will undoubtedly be characterized by even greater dynamicness and activeness. It must be expected that this circumstance will significantly increase the role of the maneuvering of forces carried out in the aim of concentrating them on threatened sectors. As a counterweight to the ability of the advancing side to concentrate superior forces on selected axes, the defending side must employ tenacity in troop operations, speed and flexible maneuvering of the available forces.

FOOTNOTES

1. "Operatsii Sovetskikh Vooruzhennykh Sil v Velikoy Otechestvennoy voyne 1941-1945" [Operations of the Soviet Armed Forces in the Great Patriotic War of 1941-1945], Moscow, Voyenizdat, Vol 2, 1958, p 227.

2. TsAMO SSSR [Central Archives of the USSR Ministry of Defense], folio 203, inv. 27777, file 75, sheets 1-5.

3. Ibid., sheet 333.

4. Ibid., inv. 2843, file 431, sheets 35-37.

5. "Kurskaya bitva" [The Battle of Kursk], Moscow, Nauka, 1970, p 315.

6. Ibid., pp 111-112.

7. TsAMO, folio 203, inv. 2673, file 6, sheet 40.

8. Ibid., folio 243, inv. 2900, file 1903, sheets 50-55.

9. Ibid., inv. 2912, file 143, sheet 29.

10. "Operatsii Sovetskikh Vooruzhennykh...," Vol 4, 1959, pp 241-245.

11. "Sovetskaya artilleriya v Velikoy Otechestvennoy voyne 1941-1945 gg." [Soviet Artillery in the Great Patriotic War of 1941-1945], Moscow, Voyenizdat, 1960, p 68.

12. Ibid., pp 669-670.

13. "Operatsii Sovetskikh Vooruzhennykh...," Vol 4, pp 219-220.

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CSO: 1801/53

FROM EXPERIENCE OF LAUNCHING LONG-RANGE AIR RAIDS AGAINST ENEMY MILITARY-INDUSTRIAL OBJECTIVES

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 9, Sep 86 (signed to press 26 Aug 86) pp 34-40

[Article by Hero of the Soviet Union, Col Gen Avn V.V. Reshetnikov]

[Text] According to the prewar views, the long-range bomber aviation (DBA), being a weapon of the High Command, was assigned primarily to undermine the military-economic might of the enemy by operations against installations in its deep rear in the interests of the war as a whole.(1) Its combat training were subordinated to this and in the course of the training flights were worked out to a tactical range using large groups during the day and at night, under good and bad weather conditions with bombing over ranges from medium and high altitudes, the carrying out of antiflak maneuvers and the repelling of fighter attacks by group machine gun fire from close battle formations of the squadrons and regiments.

By the start of the Great Patriotic War there were over 1,000 aircraft in the five DBA corps, the three separate divisions and separate regiment. Of these around 86 percent was the DB-3 bombers of various modifications and 14 percent the TB-3. There were just 11 new TB-7 (PE-8) aircraft.(2) Among the flight personnel there were numerous participants of combat operations in Spain, China, at Lake Khasan and on the Khalkhin-Gol River, as well as the Soviet-Finnish War of 1939-1940. The combat experience gained at that time confirmed the correctness of the views on employing the DBA as well as for organizing its operational and combat training.

The developing severe situation on the fronts, the winning of air supremacy by the enemy and the small number of frontal attack aviation forced the Soviet Command at the outset of the war to focus the main efforts of the DBA on carrying out new missions, primarily supporting the ground troops. The DBA corps were involved in combating enemy tanks and motorized columns.

The necessity of involving the long-range bombers in destroying objectives on the battlefield and in the front rear was also caused by the fact that not all the crews of frontal (tactical) aviation had been trained for nighttime combat and as a result of this it was impossible to fully realize one of the most important principles of Soviet military art, continuous operations against the

enemy. Under these conditions the nighttime raids by the DBA pilots against enemy troops assumed particularly important significance.

Moreover, when at the end of 1941 and in 1942, the Nazis succeeded in driving deep into Soviet territory, many major objectives in the enemy rear were beyond the reach of our bombers. These reasons explain the fact that during the years of the Great Patriotic War, raids against the enemy military-industrial and administrative-political centers were not widely employed. For carrying out the given mission the long-range bombers made only 3.1 percent of the total number of aircraft sorties (around 7,000), while 40.4 percent was made for attacking troops and combat equipment on the battlefield, 30.6 percent against railroad installations and reserves beyond the range of the frontal aviation and 9.6 percent against airfields.(3)

However, this does not mean the abandoning of the previously accepted views on the main mission of the DBA. On the very first day of the war, the I, II and III Long-Range Bomber Corps (commanders, Gen V.I. Izotov, Col K.N. Smirnov and Gen N.S. Shripko) were given the mission on 23 June of attacking with the main forces the major military objectives, respectively, in the cities of Konigsberg and Danzig, Lublin and Katowice, in the Warsaw area, while the 18th Separate Long-Range Bomber Division was to do the same in the Krakow area.(4) The mission was completed. However, all the units, in operating during the day and without a fighter cover, suffered significant losses.

Starting on 26 June, the IV DBA Corps (commander, Col V.A. Sudets) in cooperation with the Black Sea Fleet Air Forces (commander, Gen V.A. Rusakov) began bombing the oil industry enterprises in royal Romania. By accurate bombing strikes in the cities of Ploesti, Constanta and Bucharest, certain oil refineries were put out of operation, the oil tank farms were burned up and many oil rigs destroyed. Oil output in Romania was cut in almost one-half. With good reason Hitler feared that the destruction of the only oil fields available to Germany could have unforeseen consequences for the continuation of the war.(5)

Unfortunately, the reassigning of the long-range bombers to combating enemy troops on the battlefield did not make it possible to complete the commenced destruction and this, undoubtedly, would have put the Nazi army in a difficult situation. However, having concentrated its main efforts on combating enemy tank and motorized groupings, the DBA in June-August continued to use a portion of its forces against military installations in Konigsberg, Danzig, Helsinki and Warsaw. The raids not only caused destruction but also forced the enemy to keep significant forces of antiaircraft artillery and fighter aviation in covering the rear facilities.

At the beginning of August 1941, Headquarters adopted the decision to make a number of raids against objectives in Berlin as a retaliatory measure for the raids by Nazi aviation against Moscow and Leningrad. The first of these during the night of 8 August was made by a group of 13 DB-3 aircraft from the 1st Minelaying and Torpedo Regiment of the Red Banner Baltic Fleet Air Forces operating from the Kagul Airfield on Saaremaa (Esel) Island in the Baltic Sea. The group was led by the regiment's commander, Col Ye.N. Preobrazhenskiy.(6) A repeat flight was made on the following night.

To increase the might of the raids, two DBA squadrons (20 IL-4) under the command of Maj V.I. Shchelkunov and Capt V.G. Tikhonov were shifted to Saaremaa Island (Aste Airfield). Starting on the night of 11 August, they began the raids on Berlin.

By this time, the island was already in the enemy rear some 350-400 km behind the front line. The Nazis bombed the island airfields night and day, they shelled them with naval artillery, they set afire the transports carrying fuel and ammunition at sea, however the bombings of Berlin did not stop. The crews had to operate under difficult navigational and weather conditions as the flight was largely made over the sea, under bad conditions and this caused difficulties in orientation; at dawn at the time of landing the airfields were frequently covered in fog and there were no alternate airfields. The last sorties by several crews for the mission were carried out using gasoline siphoned from the tanks of other aircraft. Only at the start of September did both squadrons leave the island. Also involved with the bombers from Saaremaa Island in the raids against Berlin were the heavy four-motor TB-7 bombers from the 81st DBA Division (commander, Brig Cmdr M.V. Vodopyanov) operating from Pushkin Airfield near Leningrad.(7)

Over the period from 8 August through 4 September, Soviet pilots ma[illegible] 10 raids (around 90 aircraft sorties) over the capital of Nazi Germany, dropping several hundred large-caliber high-explosive bombs. Scores of the most distinguished on 13 August were awarded the title of Hero of the Soviet Union by the Ukase of the Presidium of the USSR Supreme Soviet. Among them were five representatives of the DBA: Majs V.I. Shchelkunov and V.I. Malygin, Capts V.G. Tikhonov and N.V. Kryukov and Lt V.I. Lakhonin.(8)

Simultaneously with the raids against Berlin, the long-range bombers bombed military installations in Memel, Danzig, Kolberg, Tilsit, Warsaw and other cities deep in the enemy rear. As a total over the first 6 months of the war, the formations of the DBA and the naval air forces made 549 aircraft sorties for carrying out this mission.(9) The enemy suffered a good deal of damage. But even greater was the political significance of these actions. They unmasked the lie of Nazi propaganda about the supposed defeat of Soviet aviation, they had a depressing effect on the population and the troops of Germany and its satellites while raising the morale and confidence of the Soviet people in their victory.

With the transformation of the DBA in March 1942 into the long-range aviation (ADD) and with its direct subordination to Headquarters Supreme High Command [Hq SHC], the intensity of nighttime operation against objectives in the deep rear noticeably increased (up to the end of the year 1,114 aircraft sorties were made). Under the impact of the quantitative growth, the organizational changes and the acquired experience, the nature of the ADD operations was changed with massed attacks by large forces coming to predominate. In contrast to 1941, when each crew carried out a mission independently outside of tactical contact with the other crews in the battle formations of the long-range bombers, in addition to the attack groups, support groups appeared which included weather scouts, and aircraft for locating, marking and illuminating the targets, as well as photocontrol of the bombing results. The significant

expansion of the network of radios and light beacons, homers and direction-finding bases made it possible to increase the accuracy and reliability of nighttime navigation. Through the established Central Radio Communications Center, the ADD Staff gained an opportunity to monitor the flight of each crew in the enemy rear up to a range of 1,600 km. All of this helped to increase the effectiveness of long-range bomber operations.

In June 1942, Hq SHC adopted a decision on the eve of the anniversary of the outbreak of the war to attack Berlin in order to remind the enemy of the approaching retribution. But the June nights, as is known, were too short and the bombers could have suffered irretrievable losses. Moreover, it was essential to resolve the problem of the reachability of enemy objectives. Certainly the enemy was at the walls of Leningrad and Novgorod, Rzhev and Vyazma were in its hands. The distance from our airfields to Berlin, in comparison with the August raids from Saaremaa Island in 1941 had almost doubled. Considering the usual west-to-east winds, this meant 10-12 hours of flight. For a route of such length the fuel loads for the IL-4 long-range bombers might not suffice.

For this reason Headquarters agreed with the arguments of the ADD commander, Gen A.Ye. Golovanov, and permitted the shifting of the raids against the Nazi capital to later and better times for us, but at the same time demanded that Konigsberg be bombed. In accord with the received orders, on 18, 21, 24 and 26 July, the ADD made concentrated strikes with large forces against the military installations of this city. However, due to the extremely bad weather conditions on the first flight to the target only 38 aircraft out of the 75 which took off were able to get through and in the subsequent raid, 57 out of 88. The remainder bombed alternate targets in East Prussia and the Baltic. As a result of the raid made on 26 July, a defense plant was blown up in the eastern part of Konigsberg.(10)

The July combat sorties with a flying time of 7-8 hours were good schooling in preparing for the subsequent raids against Berlin. In making them an analysis was run on the characteristics of fuel consumption and optimum flight conditions were chosen for each aircraft. In the aims of increasing flight range, two underwing fuel tanks which could be dropped after use were fastened to the underbelly of the IL-4. They had enough fuel for 1.5 hour of flight. Moreover, for reducing flight time to the target, the decision was taken to use "leapfrog" airfields. Careful and thorough preparations were carried out. The pilots and navigators studied the objectives down to the smallest details, they clarified the route and carried out navigation and bombing calculations.

The raids against Berlin were made during the night of 27 and 30 August and on 10 September. As a total these involved over 200 aircraft.(11) The crews of the TB-7 operated from their own base airfield while the crews of the IL-4 operated out of operational airfields. At the same time Konigsberg, Danzig, Stettin and Tilsit came under bombing attack. These cities were alternate targets for the crews which for some reason were unable to reach Berlin.

In comparison with 1941, the air defenses of the Nazi capital, like the other important enemy military-industrial and administrative-political centers, had been significantly strengthened. The carefully blacked-out city was covered

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by 200 searchlights, barrage balloons and several hundred antiaircraft guns of medium and large caliber. The antiaircraft fire was concentrated at altitudes of from 4,000 to 9,000 m. Beyond the zone of the antiaircraft artillery operated the night interceptor fighters among which were the first aircraft equipped with on-board radars.

The crews came in over Berlin from different directions and at different altitudes, but not lower than 5,000 m to avoid colliding with the barrage balloons. Having located the given target and dropped the bombs and leaflets, with an energetic drop and turn they endeavored to quickly leave the searchlight and antiaircraft fire zone. As a result of the bombings in Berlin around 50 fires were noted including 13 large ones and 6 powerful explosions.(12) The objectives in the other cities also suffered significant damage.

During the night of 8 September, 4 ADD divisions bombed military installations in the areas of Budapest, Konigsberg, Stettin and Danzig. Less than a week later, during the night of 14 September, 58 crews from the 3d, 17th and 45th Air Divisions again made bombing strikes against military-industrial objectives in Bucharest, Ploesti, Galati and certain other cities. Several large explosions were recorded in the Romanian capital in the area of the defense ministry, the barracks and arsenal, while there were 6 large fires at the Ploesti oil fields.(13) After these raids, virtually all the ADD forces were concentrated on operations in the interests of the fronts of the Stalingrad area, where the fate of the entire war was largely being determined.

Military operations against objectives in the deep rear resumed in the spring of 1943 with the launching of raids against the East Prussian cities. In April-May alone, ADD pilots made 1,027 aircraft sorties and dropped 826 tons of bombs, among which there was a significantly greater proportional amount of large-caliber bombs.(14) In particular, during the night of 29 April, in a raid against Konigsberg, a bomb weighing 5,000 kg (FAB-5000) was dropped for the first time from a PE-8 aircraft. The density of the bombing strikes also increased. All of this, regardless of the stiffening air defenses of the enemy cities, helped to increase the effectiveness of long-range bomber operations.

Operations against enemy administrative-political and industrial centers assumed the widest scope during the third period of the war. By this time the ADD had grown quantitatively and the distance to the designated objectives had been shortened due to the successful advance of the Soviet Army to the west. In 1944, for carrying out the given mission, formations of long-range bombers made 4,466 aircraft sorties, that is, 1.7-fold more than over the 2.5 previous years of the war.(15) In a number of instances these were not merely raids but carefully planned and prepared air operations designed to achieve strategic results.

In the first of the operations conducted in February 1944, military and industrial objectives in the Finnish capital, Helsinki, were attacked. The aim of the operation was to disrupt military-industrial production and state administration of one of the satellites of Nazi Germany and thereby force it

out of the war. In the course of preparations, a portion of the air formations was relocated to forward operational airfields. There also was the operations group headed by the ADD Chief of Staff, Gen M.I. Shevelev. Through it, the ADD Commander, Mar Avn A.Ye. Golovanov, from the forward command post in Leningrad directed the operations of the long-range bombers.

In accord with the plan of the air operation, during the night of 7, 17 and 25 February, massed raids were launched. The operational configuration of the ADD consisted of corps columns. The battle formation of each of these included a group of weather scouts, a support wave (groups for guidance and illumination of targets and neutralizing air defenses), an attack wave and a control group. The attack wave was a flow of individual bombers traveling one behind the other at different altitudes and a fixed time interval. As a total during the operation, the pilots made 2,120 aircraft sorties and dropped 2,386 tons of bombs.(16) Particularly powerful was the third raid which lasted 12 hours. This involved 850 bombers.(17) The density of the attack reached 4-5 aircraft a minute. The results achieved largely contributed to the accelerated withdrawal of Finland from the war.

The air operation conducted by the ADD in September 1944 in Hungary had analogous goals and consequences. During the night of 14, 15, 19 and 20 September, the air formations launched 4 massed attacks against military-industrial objectives and state administrative centers in Budapest. As a total 1,129 aircraft sorties were made and over 8,000 bombs dropped. Here the density of the attacks reached up to 9 aircraft a minute.(18)

During the designated period, the long-range bombers operated outside the plan of the air operation but with the same goals against other military and industrial centers of this country as well as against rail and highway junctions. Considering these operations against major Hungarian objectives, in September, 2,905 aircraft sorties were made and 3,100 tons of bombs were dropped. To a significant degree this predetermined the withdrawal of the last ally of Nazi Germany from the war.(19) Somewhat previously Romania and Bulgaria had withdrawn from the Nazi bloc and the ADD had also played an important role in this.

By 1945, when the fighting was already underway on German territory, there virtually were no long-range targets. By this time (in December 1944) the ADD was transformed into the 18th Air Army and put directly under the commander of the Soviet Army Air Forces. But, as before, it was employed chiefly where a particularly powerful attack was needed. For example, along with the heavy artillery, the ADD was assigned the role of the main strike force in the storming of Konigsberg.

On 7 April 1945, 516 heavy bombers under a cover of 232 fighters, made a powerful bomb strike against the strongpoints and forts of Konigsberg. Some 20 minutes prior to the raid, 118 ground attack planes and frontal bombers attacked and sealed off the enemy fighter airfields. The dependable combat support made it possible for the heavy bombers to successful carry out the set mission and return to their airfields without losses. But 3,742 bombs with a total weight of 550 tons had been dropped on the enemy.(20) As a result, many strongpoints and forts were destroyed, movement of troops through the city was

halted and the garrison command, as was subsequently learned from the interrogation of prisoners, lost command of the troops and was unable to maneuver reserves. Enemy resistance declined sharply and our units began to advance more rapidly to the center of Konigsberg. On the following day, the storming of the fortress from the air continued and by the end of 9 April, the enemy had laid down its weapons.

Thus, the experience of the Great patriotic War showed that Hq SHC had constantly endeavored, with the first opportunity, to employ t e ADD for attacking objectives deep in the enemy rear, including: military-industrial enterprises, important communications centers, centers of control of the nation and the troops, major dumps, ports and so forth. At the same time, Headquarters constantly felt an acute need to have in its hands a powerful and highly mobile attack weapon for carrying out particularly important and suddenly arising missions in the interests of the fronts.

But, regardless of the fact that the long-range bombers made a little more than 3 percent of the total number of combat aircraft sorties for carrying out tasks related to their direct purpose, the enemy suffered a good deal of losses.

The air operations and systematic attacks of the ADD against enemy military-industrial objectives were marked by a boldness of concept, by a significant concentration of forces, by a decisiveness of goals and actions, by a high level of combat support and by firm and reliable command. The experience of their organization and execution as well as the training of the flight personnel for the flights with a maximum bombload deep into the enemy rear crossing air defenses, has not lost its pertinence at present. It is an inexhaustible treasure-house of knowledge and a dependable aid in further strengthening the combat might of our glorious Air Forces.

FOOTNOTES

1. "Boyevoy ustav bombardirovochnoy aviatsii (BUBA-40)" [Combat Manual of Bomber Aviation (BUBA-40)], Moscow, Voyenizdat, 1940, pp 8-9.

2. TsAMO SSSR [Central Archives of the USSR Ministry of Defense], folio 35, inv. 11282, file 20, sheet 242.

3. I.V. Timokhovich, "Operativnoye iskusstvo Sovetskikh VVS v Velikoy Otechestvennoy voyne" [Operational Art of the Soviet Air Forces in the Great Patriotic War], Moscow, Voyenizdat, 1976, p 246.

4. TsAMO, folio 35, inv. 11285, file 16, sheets 63-66.

5. "Sovershenno sekretno! Tolko dlya komandovaniya!" [Top Secret! For Eyes of Command Only!], Moscow, Nauka, 1967, p 319.

6. TsAMO, folio 35, inv. 78125, file 3, sheet 120.

7. Ibid., inv. 11250, file 8, sheet 70.

8. A.D. Tsykin, "Ot 'Ili Muromtsa' do raketonostsa" [From the 'Ilya Muromets' to a Missile-Carrying Aircraft], Moscow, Voyenizdat, 1975, pp 68, 69.

9. I.V. Timokhovich, op. cit., p 247.

10. N.S. Skripko, "Po tselyam blizhnim i dalnim" [Against Near and Distant Targets], Moscow, Voyenizdat, 1981, pp 203, 204.

11. A.D. Tsykin, op. cit., p 77.

12. Ibid.

13. N.S. Skripko, op. cit., pp 231, 232.

14. A.D. Tsykin, op. cit., p 79.

15. I.V. Timokhovich, op. cit., p 248.

16. Ibid., p 249.

17. "Sovetskiye Voyenno-Vozdushnyye Sily v Velikoy Otechestvennoy voyne 1941-1945 gg." [Soviet Air Forces in the Great Patriotic War of 1941-1945], Moscow, Voyenizdat, 1968, p 241.

18. I.V. Timokhovich, op. cit., p 250.

19. TsAMO, folio ADD, inv. 362906, file 1, sheets 21-30.

20. "9 maya 1945 goda. Vospominaniya" [9 May 1945. Memoirs], Moscow, Nauka, 1970, p 288.

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COMBATING TANKS

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 9, Sep 86 (signed to press 26 Aug 86) pp 41-47

[Article by Candidate of Military Sciences, Lt Col V.P. Shipovalov, published under the rubric "Local Wars"]

[Text] The experience of the most significant-scaled local wars (in Korea, Vietnam and the Near East) unleashed by the imperialist states since World War II has shown, as Western specialists feel, that tanks as before remain an important means of armed combat. They have been assigned and are assigned the role of the main strike force of the ground troops in carrying out different type missions. A number of local wars, and particularly the 1973 Arab-Israeli War in which over 6,000 tanks were involved on both sides,(1) convincingly shows that in the course of combat chief attention was given to combating the enemy tanks and the success of this in a number of instances predetermined the outcome of the combat (operation). It must be pointed out that the methods of combating the tanks and other armored vehicles has been definitely influenced by the level of the equipping of the troops with antitank weapons and their combat properties as well as by the specific conditions of the theater of operations.

In the course of the war in Korea (1950-1953) and which involved a total of up to 1,500 tanks, various antitank weapons were employed to combat them. The Korean People's Army employed artillery, tanks and SAU [self-propelled artillery mount] combined with the fire of infantry weapons and mixed minefields. The Americans employed aviation, tanks, artillery and antitank mines.

The antitank defenses of the Korean People's Army, as a consequence of the mountainous terrain and the abundance of flooded rice paddies, was organized considering the surfacing of roads and tank-accessible valleys. On the main likely tank approaches, they organized a tactical defensive zone to the entire depth.

On the forward edge and in the near depth, battalion antitank centers were organized with a density of 10-12 guns per kilometer of front. Moreover, within the main defensive zone antitank areas were established consisting of 7-8 guns each. Here the antitank cannons were placed along both sides of

roads. In such an unique corridor the enemy tanks which broke through were destroyed by flanking fire of direct laying guns.(2) The designated method of employing the antitank artillery was determined by the limited maneuverability of the tanks and their operations basically along roads.

Artillery combated tanks on the defensive from indirect firing positions. This commenced the moment the tanks reached an observable zone by laying a creeping barrage fire (PZO). The first PZO line was usually designated 1.5-2 km away from the forward defensive edge and the last in the area where the enemy tanks came out in the zone of actual fire by the guns assigned for direct laying firing. However, as a consequence of the insufficient amount of 122-mm guns and the absence of larger caliber guns, antitank defenses were ineffective. As an exception, the combating of tanks started the moment they reached the range of long-range artillery fire (DON) and concentrated fire.

The tanks and SAU of the Korean People's Army [KPA] were also effectively used for combating enemy tanks under the mountainous conditions. They usually operated from an ambush in groups of two or three vehicles. As a rule, fire was opened up at point-blank range. For destroying tanks which had broken through deep into the defenses, the KPA divisions established antitank artillery reserves and mobile obstacle construction detachments.

Minefields were set out ahead of the forward defensive edge in the tactical and sometimes also the operational depth on likely tank approaches and these minefields not only damaged the tanks but also held up their advance, impeded maneuvering and established good conditions for destruction by other weapons.

In the course of the fight for the main defensive zone, the enemy tanks were also destroyed by the fire of antitank rifles and grenades.

Characteristic of the combating of tanks on the offensive was nighttime operations with the extensive employment of antitank groups organized in each regiment and consisting of 10-15 men. They were armed with grenades and Molotov cocktails. A surprise attack on the enemy was their method of fighting.

The American Command, in organizing defenses, positioned all the TOE and attacked antitank weapons of the ground forces in strongpoints which were prepared for the infantry subunits from a platoon up to a company as well as in company (battalion) centers of resistance. It assigned the main role to aviation, tanks and infantry antitank weapons in combating the KPA armored targets.

Aviation employed high-explosive and fragmentation bombs, missiles and incendiary weapons in the form of napalm against tanks. Here the aircraft initially attacked the tanks with high-explosive and fragmentation bombs and then dropped napalm on them. When the crews had abandoned their places and measures were being taken to extinguish the burning tanks, the American pilots fired on them from machine guns.

The American troops employed their tanks on the defensive as weapons which strengthened the antitank defenses of the infantry units and subunits. The

combat vehicles were usually employed on the forward edge in direct firing positions and fired with direct laying against the attacking KPA tanks.

The combating of advancing KPA tanks was also done with infantry antitank weapons. Particularly widely employed were antitank rifles of the bazooka type which pierced armor up to 280 mm thick.

On the offensive American troops employed the same weapons for combating armored targets as on the defensive. As for the methods of their employment, these actually did not differ from those elaborated by the practices of World War II.

In the War in Vietnam (1964-1965) in which limited use was made of tanks, the Americans employed aviation, tanks, recoilless weapons and antitank rocket launchers against the combat vehicles of the South Vietnamese patriots. At the beginning of the 1970s, the U.S. Command and military specialists under combat conditions tested out new antitank weapons, antitank guided missiles (PTUR) or TOW, which demonstrated, as was pointed out in the foreign press, high effectiveness in being launched both from the ground and from helicopters. On the basis of experience gained in Vietnam, helicopters armed with PTUR were considered in the NATO countries as the most promising means for combating tanks.

At the start of the war when the American and Saigon troops had a predominant superiority in forces, the South Vietnamese patriots as a rule fought in small subunits from an ambush. At that time, their antitank defenses were created basically by recoilless weapons, close-combat antitank weapons and mixed minefields. Antitank mines were employed with particular effectiveness. Just in 1970, the losses caused by them in the armored equipment of the U.S. ground forces were 70 percent of all the combat vehicles damaged and destroyed by the various antitank weapons of the South Vietnamese patriots.(3) In the course of fighting, they, as a rule, did not set out minefields but widely employed so-called disturbance mining. The skillful placement of several antitank mines and the blowing up of American tanks on them disorganized the actions of the combat vehicles. For combating enemy tanks when they were operating along roads, subunits of the PLAF [People's Liberation Armed Forces] usually took up a line advantageous in antitank terms, positioning recoilless weapons on it closer to the flanks while the hand-held rocket launchers (RPG) were along the entire front. With the approach of enemy tanks to the previously prepared line, the patriots opened up flanking fire from the recoilless weapons simultaneously at the head and last vehicle, and from the RPG at all the remaining, thereby achieving the greatest effect in combating them.

In the course of the operations against the American and South Vietnamese troops, the PLAF Command constantly improved its antitank defenses. It closely linked the combating of tanks with the general defensive tasks. For example, the connecting of underground structures designed to shelter troops with firing positions on the ground surface made it possible for the South Vietnamese patriots to maneuver the antitank weapons considering the tactics of the advancing enemy and make maximum use of the protective properties of the terrain.

The American-Saigon troops, due to the absence of armored equipment in the PLAF troops at the outset of the war did not establish antitank defenses. The existing antitank artillery was basically employed by them for destroying the earthen and concrete fire emplacements of the PLAF. During the concluding period of the war, when the PLAF troops began to employ tanks, the Americans and the command of the puppet forces were forced to organize a defense against them. In particular, they increased the number of antitank weapons in the infantry units and formations. They began to employ PTUR from helicopters. Special "immediate response subunits" appeared in the American troops and these were lifted by helicopter to threatened likely tank approaches. The command of the American-Saigon troops endeavored to organize close cooperation of aviation and helicopters with the fire of the ground antitank weapons. For example, considering the weak points of recoilless weapons (short-range, insufficient accuracy and giveaway signs in firing), these were positioned on the forward edge and carefully camouflaged. The fire from them and other antitank weapons was opened up with the appearance of helicopters armed with PTUR over the battlefield.

The most instructive lessons in the area of combating tanks and antitank weapons came from the wars in the Near East in 1967 and 1973.

By the start of the 1957 Arab-Israeli War, the Israeli ground forces had 1,100 tanks and SAU. The Israeli troops did not employ any new antitank weapons in this war. They basically used obsolete models of antitank artillery and PTUR of the SS-10, SS-11 Cobra type(4) and napalm bombs. The armed forces of Egypt, Syria and Jordan had 1,950 tanks and SAU.(5)

The antitank defenses of the Arab armies were established, as a rule, in the tactical zone. Ordinarily three antitank lines were prepared in the main defensive area. The first included antitank obstacles ahead of the forward edge of the main area and the defensive zones of the first echelon battalions. This was designed to repel Israeli tank attacks ahead of the forward edge. On this line the main role in destroying the enemy tanks was assigned to the antitank artillery which fired by direct laying. The second defensive line was organized on the line of the second echelons and reserves of the infantry brigades and was aimed at preventing the tanks from breaking through deep into the defenses. Here were located dug-in tanks. Behind the second line were the artillery firing positions. Then, a third line was located on the line of the second echelon and reserves of the motorized infantry divisions. The depth of the tactical defensive zone was 6-8 km.(6) Such antitank defenses essentially met the level of the combat capabilities of the available antitank weapons. However, the insufficient combat training of the personnel in the Arab armies reduced the effectiveness of their actions.

The Israeli Army in this war basically conducted offensive combat operations. For combating the tanks of the Arab armies, the Israelis widely employed aviation which attacked the tanks employed in the defensive system as well as in the reserve groupings. According to data in the foreign press, the aviation was responsible for the largest number of losses in armored equipment suffered by the Arab ground forces.(7)

The success of the Israelis in combating the armored targets was achieved chiefly by the fire effect of the antitank weapons against tanks both in the tactical and operational defensive depth. In the tactical depth, Arab tanks were destroyed, as a rule, simultaneously with the antitank weapons. The destruction of artillery was entrusted basically to tactical airborne groups. The close-action antitank weapons were hit by small arms and artillery fire of the motorized infantry subunits and units. For destroying tanks in the operational depth, the Israeli Command widely employed armored brigades. In using the spaces between the defensive areas of the Arab troops, these formations rapidly reached the designated lines and by firing with direct laying from a halt hit the counterattacking tanks. Such actions by the Israeli troops were usually successful and led to great tank losses in the Arab troops.

The employment of tank troops gained the greatest scope in the Arab-Israeli War of October 1973. By the start of it Israel had 1,700 combat vehicles organized in 10 armored brigades.(8) All its tanks had been modernized and had increased effectiveness in fighting against tanks and antitank weapons. The Egyptian Army had 2,200 tanks and the Syrian Army had 1,350 tanks.(9)

For combating the tanks, the belligerents made mass employment of new or improved weapons, including: PTUR, infantry combat vehicles, antitank and self-propelled artillery as well as fire support helicopters armed with PTUR.

The Western press has pointed out that the experience of the 1973 October War demonstrated the increased effectiveness of air strikes employing air-to-ground missiles armed with autonomous control systems. According to data of foreign military specialists, in the course of the fighting the Israelis, for example, destroyed 52 Arab tanks using 58 Maverick guided missiles.(10) In addition to the American Maverick guided missiles with a television guidance system, Israeli aviation also employed hollow-charge antitank bombs dropped with the aid of air canisters of the Rockeye type. The canisters were loaded with a large amount of small bombs which in being dropped from the aircraft pierced the relatively thin armor of the tank's hull roof plate.(11)

The tanks of the belligerents also played a major role in combating the tanks. As the Western press has stated, in the course of the fire fight between them, a dependable hit of the combat vehicles was usually achieved at a range of around 2,000 m.(12) However, there were instances of the hitting of the front armor on the turrets of the Israeli Centurion tanks by Syrian combat vehicles at a range of 3,000 m.(13)

As Western specialists feel, the antitank helicopters armed with PTUR proved to be a powerful and most promising weapon in combating tanks. In the course of the Arab-Israeli War, these were used both as independent tactical groupings as well as mobile antitank reserves. Due to the unexpected appearance over the battlefield and the free choice of the direction of the run against the target, the effectiveness of the attacks by the combat helicopters was rather high in a number of instances. Thus, in one of the battles Israeli helicopters made a surprise attack and destroyed around 50 percent of the tanks in an Egyptian brigade advancing to the Mitla Pass. In preparing to attack the tanks, the helicopters were positioned in a shelter a

short distance from their troops and this ensured their surprise appearance over the battlefield. The PTUR were launched from the helicopters at altitudes of 25-50 m and sometimes 100 m.

In analyzing the combat experience, specialists from the NATO countries have pointed out that the combating of tanks in this war had a number of characteristic features which were apparent both on the offensive and the defensive. In the Egyptian and Syrian armies, in carrying out the artillery softening up for an attack prior to the start of the offensive, firing was carried out, as a rule, not against targets but rather against areas. For this reason their artillery was unable to fully carry out the tasks of neutralizing and destroying the tanks and other weapons in the system of the Israeli antitank defenses. The subunits of PTUR and antitank artillery were employed predominantly as mixed antitank reserves and were not involved in destroying the Israeli tanks during the artillery softening up. They showed high activity only in repelling Israeli tank counterattacks. Here the PTUR subunits were deployed behind the firing positions of the antitank artillery and opened up basically volley fire from a range which significantly exceeded the range of effective fire of the Israeli tank cannon. Such a combination of antitank weapons made it possible to best employ the high effectiveness of the PTUR at great firing ranges and the antitank artillery at short ones.

In the course of the offensive, the Arab tanks usually fired on the move. However, its effectiveness was not sufficiently high due to the significant dust formations appearing in the course of combat. The tank troops often were unable to promptly detect the armored target. The range of opening fire on the offensive was 1,500-2,000 m. After pushing into the defenses, the tanks basically fired from a halt. During combat Israeli tanks were also destroyed at night from a range of 800-1,000 m.(14)

The Israeli troops on the offensive destroyed armored targets by the firing of recoilless weapons, PTUR and tank fire. For increasing the effectiveness of the combating of armored targets by the tanks, each tank battalion was reinforced by a company of motorized infantry on armored personnel carriers. In the course of the fighting the armored personnel carriers by firing their machine guns destroyed the PTUR operators and the grenade launchers and tanks destroyed other combat vehicles.

On the defensive, tanks were destroyed at the distant approaches by air strikes and by the firing of long-range artillery from indirect firing positions and at close distances and directly ahead of the forward edge by the fire of tanks, antitank artillery, PTUR (in the Israeli Army from helicopter gunships), as well as infantry antitank weapons and mixed minefields. The antitank defenses were usually formed up in accord with the plan of the command of the sides and were based upon the most efficient use of all weapons for combating the tanks.

The Israeli antitank defenses were based upon a system of strongpoints established on likely tank approaches. The basis of each of these was PTUR, conventional artillery and dug-in tanks.(15) For better organization and strengthening of the antitank defenses, the Israeli Command endeavored to make maximum use of the terrain conditions. The firing positions for the antitank

weapons were chosen considering the ability to fire by direct laying at a maximum range (3-4 km). Chief attention was given to retaining the prevailing heights and hitting the advancing Arab tanks at a long range. In organizing the antitank defenses of the Israeli Army, densities were established of up to 10-12 tanks and 4-5 antitank guns per kilometer of front.(16) The successful combating of tanks by the Israelis on the defensive was usually determined by the integrated employment of the antitank defense weapons. For example, on the Syrian Front on the forward edge they positioned antitank artillery, portable PTUR complexes and grenade launchers. The tanks and infantry combat vehicles with PTUR took up their firing positions only in the course of an attack by the Syrians. For destroying advancing tanks, Israeli troops widely employed the delay and maneuvering of the Arab combat vehicles on the battlefield during the crossing of obstacles. With the pushing of the tanks into the defenses, the Israeli Command widely employed ambushes and "fire pockets." Ambushes were organized, as a rule, at destroyed sections of roads and in defiles considering the most probable direction of movement by the Arab tank units. Tank subunits reinforced with PTUR were usually assigned for an ambush. The Israeli Command established "fire pockets" on likely tank approaches using the forces of the "antitank screens" which usually consisted of a tank battalion and a PTUR battery. The advancing Arab tanks initially came under fire by a first-echelon tank company. Then in the course of the fire fight, the Israelis moved a portion of their tanks from the forward positions into the rear, to the flanks of the PTUR battery. Here the advancing tanks were drawn into the formed mouth and came under fire. But when a large group of Arab tanks had pushed into the Israeli defenses and the threat was established of their approaching the PTUR battery or when the retreating Israeli tanks could not break off from the Arab combat vehicles, the Israelis carried out a counterattack with the forces of the second-echelon tank company. And if the Arabs still succeeded in moving forward and the PTUR battery was in jeopardy, the commander of the Israeli tank battalion called in a group of helicopter gunships which completed the destruction of the tanks which had broken through.

On 14 October 1973, Egyptian troops attempted to seize a lateral road running 25-30 km to the east of the Suez Canal. However, they succeeded in advancing only 6-10 km. On this line the Egyptian combat vehicles encountered the fire of PTUR, almost 200 dug-in enemy tanks and artillery and also came under attack by Israeli aviation and helicopter gunships.(17)

In the 1973 Arab-Israeli War, the fight against tanks was the basic content of troop actions. In this war the importance of special antitank weapons increased sharply and above all the PTUR employed both by the ground forces as well as the helicopter gunships. The main trend in the development and improvement of the antitank defenses of the belligerents was a rise in their strength and activity.

In analyzing the experience of local wars, foreign specialists have concluded that the main areas for increasing the effective combat against armored targets and their groupings under present-day conditions are: the development of new antitank weapons and the qualitative improvement of existing ones; the search for the most effective ways to employ the antitank weapons; the skillful and prompt organization of antitank defenses; widening the forms of

maneuver by the subunits and units in repelling enemy tank attacks; close cooperation between the ground forces and aviation.

FOOTNOTES

1. ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 12, 1982, p 37.
2. "Lokalnyye voyny. Istoriya i sovremennost" [Local War. History and Current State], Moscow, Voyenizdat, 1981, p 114.
3. ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 7, 1978, p 35.
4. J.J. Landau, "Israel and the Arabs," Tel Aviv-New York, 1971, p 202.
5. "Lokalnyye voyny...," p 145.
6. ARTILLERIERUNDSCHAU, No 4, 1967, pp 121-127.
7. MILITARY REVIEW, No 8, 1976, pp 3-11.
8. ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 5, 1974, p 10.
9. "Lokalnyye voyny...," p 154.
10. ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 12, 1982, p 40.
11. Ibid.
12. WEHRKUNDE, No 2, 1974, pp 74-78.
13. RUSI, No 4, 1974, pp 28-35.
14. WEHRKUNDE, No 2, 1974, pp 74-78.
15. ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 5, 1974, p 12; "Lokalnyye voyny...," p 154.
16. "Lokalnyye voyny...," p 154.
17. Ibid., p 158.

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TANK DEVELOPMENT TRENDS IN NATO COUNTRIES SINCE WORLD WAR II

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 9, Sep 86 (signed to press 26 Aug 86) pp 48-56

[Article by Candidate of Technical Sciences, Docent, Col B.S. Safonov, published under the rubric "In Foreign Armies"; the article has been written from materials in the unclassified foreign press]

[Text] In the plans of military preparations being made in the NATO countries, an important place has been given over to the quantitative and qualitative strengthening of the tank fleets. This is being done by developing new, evermore advanced models as well as by modernizing the already existing ones.

At present, the total number of tanks in the NATO countries exceeds 25,000 units(1) and 17,000 of these are in Europe.(2)

In the tank fleets of the NATO nations there are tanks from the three postwar generations.

The first generation of tanks was developed soon after World War II. In developing the tanks of this generation, abroad they abandoned the concept of two types of tanks: infantry close-support ("infantry") for which protection was considered to be the most important combat quality and tanks for exploiting success ("cruiser") with the prevailing development of mobility. Multipurpose tanks began to be developed designed to carry out a broad range of combat missions.

The United States and Great Britain were most actively engaged with developing new tanks.

In the United States in 1945, the M26 heavy tank was developed with a 90-mm cannon. In the following year they planned to develop a medium tank (T42) and a heavy tank (T43). The first was to have a 90-mm cannon with a total weight of around 35 tons and the second a 120-mm cannon and a weight of over 50 tons. However, due to a number of factors, primarily the aggressive nature of American imperialism and the expansionistic policy carried out by it, in 1948, the American Army began receiving the M46 tank and in 1950 (when the United

Table 1

Tactical and Technical Specifications of First-Generation NATO Tanks

Specifications	make of tank					
	M46	M47	M48	M103	Centurion Mk3	Conqueror
	USA				Britain	
Tank weight, tons	44	44	45	57	50	66
Crew, men	5	5	4	5	4	4
Cannon, caliber	90	90	90	120	83,4	120
Unit of fire, rounds	70	71	60	36	65	35
Machineguns, No--cal.	2—7,62; 1—12,7	2—7,62; 1—12,7	1—7,62; 2—12,7	2—7,62; 1—12,7	1—7,92	2—7,62; 1—12,7
Unit of fire, cartidges	5000; 500	5000; 500	5000; 500	. : .	3600	7500; 600
Weapon stabilizer	—	—	—	vert. pl.	2 plane	2 plane
Maximum armor thickness, mm hull/turret	100/100	100/115	120/175	120/150	76/152	200/200
Maximum speed, knh	48	50	50	34	34	34
Highway range, km	120	120	160	160	190	150
Engine type, power, kw (hp)	carb. 595 (810)	carb. 595 (810)	carb. 595 (810)	carb. 595 (810)	carb. 470 (640)	carb. 595 (810)
Transmission, type	hydromechanical				mechanical	
Suspension, type	independent torsion-bar				blocked spring	
Track, type	with rubber-metal joint				with open metal joint	

States was fighting in Korea) the M47 and in 1952 the M48 (Table 1). All these were the result of developing the design of the M26 tank.

In the mid-1950s, the M48 tank became the main one in the U.S. Army, since the T43 heavy tank which was commissioned under the index number M103 and was produced in 1951-1954, had been turned out in small numbers, while the M46 and M47 had been sold to other countries. From the end of the 1950s, the United States began delivering the M48 also to its allies. As a total from 1949 through 1964, the United States sold over 11,000 tanks overseas.(3)

In 1946, Great Britain adopted a program for postwar tank development and this focused tank construction on the development of a "universal" tank. Within this program in 1948, a modification of the MK3 Centurion tank (the first models of the Centurion had appeared in 1945) was developed with a cannon with a caliber of 83.4 mm. For this cannon a new type armor-piercing composite shell was developed, the APDS with separating sabot. The shell had a high muzzle velocity (1,460 m a second). In terms of the level of protection, the Centurion surpassed all foreign first-generation tanks but the indicators of its mobility were lower than other tanks contemporary with it (see Table 1).

The Centurion tank was commissioned in many countries. In the 1950s, over 2,500 vehicles were sold abroad.(4)

In 1954, the Royal Army began to receive limited numbers (6 units per tank regiment) of the Conqueror heavy reinforcement tank the development of which had been underway since 1949. The 120-mm cannon capable of firing APDS high-speed shells provided it with greater fire power in comparison with the Centurion. However, the desire to achieve a level of protection corresponding to it led to an excessive rise in the weight of the tank. In 1958, a decision was taken to remove these vehicles from service.

The work of developing a first postwar generation of tanks was also carried out in other countries. Thus, in France, by 1945, the efforts of specialists were concentrated on developing the standard AMX-50 tank. In 1949, the prototypes of the AMX-13 light tank were developed weighing 14.5 tons and with a 75-mm cannon comparable in effectiveness with the cannons of the medium tanks of those times. The AMX-13 was serially produced from 1952 and was in service not only in the French Army but also sold to many other nations of the world.(5)

Thus, characteristic of the tanks from the first postwar generation was a significant rise in comparison with the World War II tanks in the main fighting properties and above all fire power. This was achieved by increasing the caliber of the cannons as well as by a substantial improvement in the ammunition, in particular by a switch to the high-speed armor-piercing composite rounds with a separating sabot.

During the period the first-generation tanks were in service in the NATO countries they were repeatedly modernized. The basic modernization measures were a switch to a 105-mm cannon and diesel engines. Moreover, efforts were made to improve the fire control system, the ammunition, and design elements ensuring protection and mobility as well as to raise performance. The diagram

shows the amount of work done to modernize the M41 tank up to the level of the M48A5.

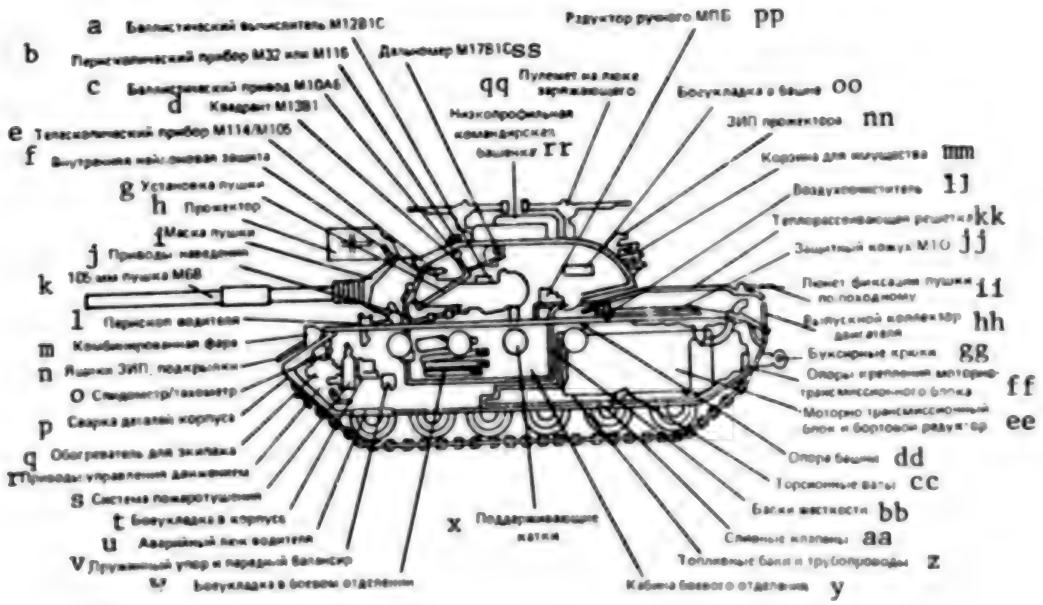

Diagram. Modernization of M48 Tank Up to Level of M48A5

Key: a--M12B1C ballistic computer
b--M32 or M116 periscope sight
c--M10A6 ballistic drive
d--M13B1 clinometer
e--M14/M105 telescopic sight
f--Interior nylon protection
g--Cannon mounting
h--Searchlight
i--Cannon screen
j--Laying drives
k--M68 105-mm cannon
l--Driver periscope
m--Combined headlight
n--Spare parts lockers, flaps
o--Speedometer/tachometer
p--Welding of hull parts
q--Crew heater
r--Control drives
s--Fire extinguishing system
t--Ammunition stowage in hull
u--Emergency driver hatch
v--Spring rest and forward axle arm
w--Ammunition stowage in combat compartment
x--Top rollers
y--Cockpit of combat compartment
z--Fuel tanks and pipelines
aa--Overflow valves
bb--Stiffening girders
cc--Torsion bars
dd--Turret support
ee--Motor-transmission unit and final drive gear
ff--Mounts for fastening motor-transmission block
gg--Towing hooks
hh--Engine exhaust manifold
ii--Rest for holding cannon in march position
jj--Protective cover of engine compartment
kk--Heat-dispersing mesh
ll--Air cleaner
mm--Equipment basket
nn--Searchlight spare parts
oo--Ammunition stowage in turret
pp--Gear for manual turret traversing mechanism
qq--Machine gun on gunner hatch
rr--Low profile commander cupola
ss--M17B1C range finder

Table 2

Tactical and Technical Specifications of Second-Generation NATO Tanks

Specifications	makes of tanks			
	M60A1 (USA)	Leopard-1 (FRG)	AMX-30 (France)	Chieftain Mk3 (Britain)
Tank weight, tons	49	40	36	54
Crew, men	4	4	4	4
Cannon, caliber, type	105, rifled	105, rifled	105, rifled	120, rifled
Unit of fire, rounds	63	60	50	53
Machineguns, number--caliber	1—7,62; 1—12,7	2—7,62	1—12,7; 1—7,62	2—7,62; 1—12,7
Units of fire, cartridges	5600; 950	5500	1200; 3500	5400; 600
Weapon stabilizer	2 plane (1973)	2 plane (1973)	2 plane (1975)	2 plane
Maximum armor thickness, mm hull/turret	120/175	70/160	70/150	83/150
Maximum speed, kmh	48	64	65	42
Highway range, km	480	550	500	320
Engine, type, power, kt (hp)	4-cycle diesel 550 (750)	4-cycle diesel 610 (830)	4-cycle diesel 530 (720)	2-cycle diesel 395 (810)
Transmission, type	hydromechcanical	hydromechanical	mechanical	mechanical
Suspension, type	ind. torsion	ind. torsion	ind. torsion	blocked spring
Tracks, type	rubber,-metal joint	rubber-metal joint	open metal joint	open metal joint

The desire of the NATO leadership for military-technical superiority over the Warsaw Pact countries caused the appearance in the mid-1960s of a new, second postwar generation of tanks. An important feature of this generation was the ubiquitous transition to a standard type, to a so-called main battle tank. In the designs of the main vehicles, the high levels of fire power and protection inherent to the previous heavy tanks were synthesized with the mobility characteristic of medium tanks. Under these conditions, the dividing of tanks by weight into heavy and medium lost any sense.

At this time, West Germany joined the tank-building states and it, in accord with the decision of the 1945 Potsdam Conference, had not had the right to produce heavy weapons. The experience gathered over the years of World War II and the significant military allocations made it possible for West Germany in a comparatively short period of time to emerge among the nations producing tanks not only for its own army but also for sale.

The main tanks of the second generation were the M60A1 (United States), the Leopard-1 (West Germany), the AMX-30 (France) and the Chieftain (Great Britain). The tactical and technical specifications of these tanks are shown in Table 2.

The most numerous in NATO has been the American M60A1 tank the series production of which started in 1962 (a total of over 13,000 vehicles have been produced and the United States has sold around one-half overseas). Its characteristic features are the employment of the English-developed 105-mm cannon produced in the United States by license as well as the all-cast hull and turret. It, like the other tanks of this generation, had special safety equipment for defense against weapons of mass destruction, in particular a filter ventilator designed to supply purified air to the crew.

At the end of the 1970s, the tank was modernized and was called the M60A3.

The Leopard-1 and AMX-30 tanks were developed according to standard requirements in accord with a trilateral agreement concluded in 1957 by France, West Germany and Italy and aimed at developing a standard European tank and thus preventing the penetration of American equipment into the NATO allied armies. However, the intermonopolistic contradictions of these three countries were stronger than their desire for unity and as a result Italy purchased the American M60A1 tank (a certain number of these was manufactured by Italian industry under license), while France and West Germany developed their own national vehicles which were similar in terms of the level of combat properties.

The AMX-30 tank was commissioned in France in 1963 and was serially produced from 1966. It is the lightest of the NATO tanks. A particular feature of the vehicle is the use of a 12.7-mm machine gun or a 20-mm automatic cannon which are coupled with the 105-mm main cannon and which have been mounted on an auxiliary armored mask providing an aiming angle in the vertical plane from -8 to +40 degrees. The turret and the front part of the hull are cast and the remaining parts of the hull are made out of rolled armored sheet. In the course of modernization during the 1970s, along with other measures to increase the fighting properties, a hydromechanical transmission was installed

in place of a mechanical one on the AMX-30. The vehicle was termed the AMX-30B2.

The Leopard-1 went into series production in 1965. It was employed by the Bundeswehr as well as armies of the other NATO countries such as Italy, Belgium, the Netherlands, Denmark, Canada and Norway.(6) For German tank building this was an untypical employment of comparatively light armor. However, later West German specialists concluded that dependable armor protection, high mobility and measures to reduce the postarmor effect of the shells of antitank weapons hitting the tank should not be in opposition to one another but mutually compliment one another. For this reason, in the course of modernizing the tank, its protection was strengthened and this led to increased weight from 40 to 42.2 tons. In modernization the Leopard-1 was successively named the 1A1, 1A2, 1A3 and 1A4. A characteristic feature of the tank is that its transmission provides for a power take-off and this is of great importance in employing the chassis as a base one.

The English Chieftain tank commissioned in 1965 is the heaviest of the second generation. It has the highest specifications for the "weapons--armored defense" system. The layout is traditional but the driver is positioned in a more fighting semilying position. This has made it possible to significantly reduce the height of the hull. The 120-mm rifled cannon stabilized in planes has been mounted in the turret without an armor screen. Its loading is separate, breech. The turret and front of the hull have been manufactured from cast armor and the remaining part of the hull from rolled armor. Its mobility is lower than in other NATO tanks contemporary to it. The Chieftain has undergone several stages of modernization, receiving, respectively, the numbers MK3, MK3/3, MK5 and MK5P.

The second-generation tanks significantly surpassed the previous ones both in terms of individual properties as well as in terms of combat effectiveness as a whole. The prevailing direction of their development has been a further rise in fire power and this has necessitated the employment of rifled high-ballistic cannons, weapons stabilization in two planes, the use of optical and then quantum range finders, night vision instruments, ballistic computers, finned armored-piercing shells possessing 1.2-1.5 greater armor penetration and so forth.

For increasing the protection against conventional weapons and weapons of mass destruction, new designs of armor protection have been developed for the tanks (for example, the "spaced armor" on the turret of the Leopard-1A3 tank) and in addition filter ventilators and automatic firefighting equipment systems have begun to be employed. The use of powerful diesels, transmissions with multiradius steering mechanisms and more advanced control systems have increased the mobility indicators.

However, by the mid-1970s, the opportunities for a further improvement in the NATO tanks by modernizing them, in the opinion of foreign specialists, had been significantly exhausted. This led to the appearance of new models of tanks for the NATO armies at the beginning of the 1980s.

The third-generation tanks such as the Leopard-2 (FRG), M1 Abrams (United States) and Challenger (Great Britain) have been made following a traditional layout. Their basic weapons are high-ballistic cannons with calibers of 105-120 mm. A characteristic feature of these tanks is the sharply increased protection against conventional weapons and weapons of mass destruction and this in turn has increased the weight up to 55-62 tons. The desire not only to maintain but even improve the mobility indicators has led to the use of a new generation of powerful engines in them.

In 1979, the Bundeswehr adopted the Leopard-2 tank. For the first time in foreign tank building practices, as the main weapon they used a 120-mm smooth-bore cannon for which two types of fixed ammunition have been developed with partially burning cartridges: armor-piercing subcaliber and multipurpose hollow charge-fragmentation. The unit of fire for the cannon is 42 rounds. An integrated fire control system has been employed including target reconnaissance instruments (with low-level television or thermal imaging), a laser range finder, an electronic ballistic computer, sensors for external firing conditions and two-plane weapons stabilizer.

Protection against conventional weapons is provided by employing modern camouflage equipment, new composite armor possessing increased strength to the impact of all types of shells, particularly hollow charge. Measures have been taken to reduce tank vulnerability by localizing damage (the employment of protected fuel and oil tanks, impenetrable partitions in the postarmor space, high-speed fire extinguishing system and so forth).

On the Leopard-2 tank they have installed a 12-cylinder multifuel, liquid-cooled diesel with a power of 1,100 kilowatts (1,500 hp), in a single unit with a hydromechanical transmission and a hydrostatic transmission in the steering drive providing smooth control of the turning radius. The tracks and suspension employ independent torsion suspension with friction shock absorbers and roller retainers.(7) They plan to produce a total of around 2,200 Leopard-2 tanks.

The American M1 tank has approximately the same combat performance as the Leopard-2 but in design terms differs substantially from the latter. The most important distinguishing features are the use of a 105-mm cannon as the main weapon (virtually the same as on the M60A3) and a propulsion unit based on a gas turbine engine.

In accord with the existing agreements between the United States and West Germany, from September 1985, the M1 tank should carry a German 120-mm smooth-bore cannon of the Leopard-2 tank the licensed production of which has been started in the United States. Here the tank will be named the M1A1. However, around one-half will have a 105-mm cannon out of the total number of vehicles planned for production (over 7,000 units).(8) The power of the AGT-1500 gas turbine engine is 1,100 kilowatts (1,500 hp) and has a smaller volume and weight in comparison with a diesel. Combined with it is a hydromechanical transmission with a hydrostatic transmission in the steering drive. The suspension is torsional with compact blade hydraulic shock absorbers, while the tracks have rubber-block hinges and pavement pads.

The English Challenger tank was the result of modernizing the Chieftian, however there are also new technical ideas in its design. The particular features of the tank are: a 120-mm rifled high-ballistic cannon with separate loading, a modern integrated fire control system, composite armor, a new four-cycle diesel with a power of 895 kilowatts (120 hp), an automatic hydromechanical transmission and a hydropneumatic suspension. This is the heaviest (62 tons) of the third-generation tanks and in the design of it one can clearly see the influence of English tank building traditions.(9)

Work is underway also on third-generation tanks in other countries. Foreign specialists feel that the given models surpass the previous generations of tanks by 1.5-2-fold in their combat capability and have reserves for subsequent modernization.

At the same time, the main tank building states of NATO -- the United States, West Germany, France and Great Britain -- along with modernizing the existing, including new tanks, have begun to develop the next fourth generation. Here further improvement involves the possibilities of realizing the most recent scientific and technical achievements in their design.

Thus, since World War II the development of the NATO tanks has been carried out in the following areas: increasing fire power; strengthening protection against all sorts of weapons; increasing mobility.

In increasing fire power, the main efforts have been focused on increasing the range of effective fire and sharply reducing the time for hitting the targets. This has been achieved by improving the cannons and ammunition for them, by increasing the effectiveness of the fire control system and by developing automatic cannon loading mechanisms.

The improvement in tank protection, being, in the opinion of foreign specialists, at present the most acute problem, in the near future can be achieved by the integrated employment of three main trends: improving the design of armor protection and the layout of the tanks; employing new camouflage devices, including smoke-making ones; the actual realization of active and dynamic protection in the tanks.

Thus, constant work is being done in the NATO countries to further develop the tanks. Foreign specialists feel that the successful implementation of this work will provide the tanks with an opportunity in the future to keep their role as an essential weapon in the weapons system of the ground forces.

FOOTNOTES

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TANKS IN COMBAT AND AN OPERATION

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 9, Sep 86 (signed to press 26 Aug 86) pp 57-63

[Article by Doctor of Historical Sciences, Prof and Honored Scientist of the RSFSR, Maj Gen I.Ye. Krupchenko, published under the rubric "Scientific Papers and Information"; the article was written on the occasion of the 70th anniversary of the first tank attack]

[Text] Early in the morning of 15 September 1916, the first 32 English tanks moved against the fortified German positions along the Somme River. The Germans knew about the intention of the English to employ a new weapon and they had undertaken a number of measures to prevent panic in the troops. However, as soon as the terrifying iron machines appeared ahead of the trenches, a majority of the German soldiers turned to flight. Certain machine gunners, in truth, attempted to halt the behemoths advancing against them by machine gun fire, but seeing that the bullets were powerless, hid in shelters or fled the battlefield.

Shortly thereafter in one of the German newspapers there appeared a letter describing the first impression of the tank attack. "Everyone stood stock still as if having lost the ability to move," it stated. "Enormous monsters were slowly approaching us, clanking, limping and swaying, but constantly moving forward. Nothing stopped them. Someone in the first line of trenches said that it was the devil and the word was passed through the trenches with enormous speed."(1)

The German Command was shaken and the troops awaited new tank attacks with fear. Strictest orders were issued demanding that they hold out at any price.

The first attack, however, did not justify the hopes placed upon it as no deep breakthrough ensued. On a narrow sector of the front, the English had succeeded in pushing in only to an insignificant distance in the enemy defenses and capture several thousand enemy soldiers. But in essence, due to the small number of new weapons, their low combat and technical capabilities and the absence of effective means of employment, there was a repetition of the history of the employment of toxins by the Germans in April 1915.

Nevertheless, the appearance of the tank on the battlefield marked a new age in the methods of fighting on land. Of course, those who observed the slow and awkward movements of the first tanks could not have even guessed that precisely this weapon would decisively alter the age-old ideas on armed combat on land.

In turning to history, it can be concluded that the appearance of the tank was a logical result of the unique "competition" between the offensive and defensive.

By the beginning of the 20th Century, the major capitalist nations possessed significant armed forces equipped with modern weapons for those times and relying on a sufficiently sound material base. In this context there was a growing trend toward a further territorial widening of the front of simultaneous combat operations and the greater complexity of the methods of their organization and conduct.

Among the most important changes in military art of the given period, one must put the birth of the positional forms of combat. The greater fire power of the weapons created in the troops of both belligerents a natural desire to take shelter from the fire. The special engineer organization of the field for sheltering the personnel offered the first such protection. This improved as the fire power of the troops rose. The increased force of fire by small arms and the development of military engineer art led to a thorough qualitative improvement in the defensive and to the rise of positional forms of fighting during the period of the Russo-Japanese War.

As is known, in October 1904, a positional front over 60 km long was organized under field conditions for the first time on the Shahe River.(2) The so-called "Shahe sitting" lasted for more than 4 months and in the course of this both sides, having abandoned maneuvering actions, went over to positional forms of combat. However, even then the problem arose of breaking through a positional front. The exposed flanks of both sides provided an opportunity to go over to maneuvering forms of combat and this actually occurred in February 1905 in the course of the Mukden Engagement.

Many military theorists of those times considered the rise of a positional front on the Shahe River to be an accident and explained this phenomenon by the specific features of military operations, by the poor training of the troops and not last of all by the lack of talent of the commanders of the Russian and Japanese armies.

The general staffs of the armed forces of a series of states felt that a future war as a whole would be short and the fighting would be of a maneuvering nature.

Such a conclusion had far-reaching consequences. In no army was serious attention paid to working out the methods of breaking through a positional defense. The troops were not trained in an offensive against such defenses and new weapons for neutralizing these had not been developed before the start of World War I.

The experience of the very first campaign of the imperialist war of 1914-1918 showed the falaciousness of the theoretical views and the methods employed in all armies by the start of the war for training the troops for combat. Particularly noticeable was the discrepancy between the battle formations of the infantry and the new conditions of fighting. An advance in close rifle lines did not prove effective. The strike force of a line was weak and the absence of depth in the battle formation and the slow approach of reserves deprived the advancing side of the opportunity to quickly build up the effort. The technical equipping of the troops was also insufficient. An infantry division had from 36 to 48 guns with a caliber of 75-76 mm. Such an amount of artillery was not enough to ensure a successful offensive against an enemy which had gone over to the defensive. Moreover, the effectiveness of fire was reduced due to the shortage of heavy-system guns, particularly in the Russian and French armies. Under these conditions an unsuccessful offensive was broken off and the advancing side itself went over to the defensive. Thus arose the very complicated problem of breaking through a positional front. The attempts to solve this in the course of World War I were made repeatedly but the means and methods employed in this for a long period of time, as a rule, were the same. Thus, initially they began to strengthen the advancing troops with artillery and then to improve the methods of the combat employment of artillery. By the end of 1915, the density of artillery in breaking through the defenses reached an amazing figure for those times, 50-60 guns per kilometer of breakthrough sector. The length of the artillery softening up was around 7-8 days.

However, the growth of artillery fire caused even greater development of engineer works and obstacles, a greater depth of the defenses, the development of permanent emplacements and the spreading out of men and weapons. Under these conditions the artillery, regardless of its rapid quantitative and qualitative growth, was unable to handle all the fire tasks of neutralizing the defensive weapons, particularly at the start of the infantry attack. The attempts to break through a fortified front, as a rule, were unsuccessful. Usually the success was restricted to capturing the first line of trenches. The desire to strengthen the breakthrough might of the infantry by condensing its battle formations merely exacerbated the failures and led to unjustified losses in personnel. In just one Verdun Battle in 1916, the German and French armies lost a total of over 100,000 men killed, around 200,000 captured and over 600,000 wounded.(3)

With each new operation it became evermore apparent that the then existing artillery without the aid of other weapons could not provide the simultaneous neutralization of the defenses to their entire depth and, what was particularly important, constantly support the infantry attack.

The attempts to escape from the "positional blind alley" by using such a new weapon as gases, for a number of reasons was also unsuccessful.

The combat conditions which developed in 1914-1915 demanded the creation of new weapons which would be capable, together with the infantry, of neutralizing the personnel and machine gun fire of the defending enemy, to destroy the wire obstacles, to help the infantry and cavalry cross the enemy's defensive area and come out in the operational open.

In time, it also became obvious that the new weapon should possess relatively high cross-country capability across the open trenches and craters of the battlefield in order to accompany the advancing infantry and should have dependable protection at least against the machine gun and small-arms fire of the defending side as well as weapons for neutralizing the enemy personnel and weapons. The self-propelled fighting vehicle developed during the years of World War I and called the tank was such a weapon.(4)

The appearance of the tank as a new weapon designed to neutralize machine guns, destroy wire obstacles and support the advance of the infantry was brought about first of all by military necessity, that is, by the conditions existing at the beginning of the 20th Century for conducting combat operations and became possible due to the development of such technical innovations as the tracked prime mover, a small-sized internal combustion engine, light rapid-fire weapons and a strong steel armor. Finally, it must be said that the development level achieved at that time in machine building made it possible to organize the production of such a number of tanks which would be sufficient for outfitting the army.

* * *

Appearing on the battlefield only in the second half of 1916, already during the years of World War I the tanks were turned from a special (and auxiliary) infantry weapon into one of the main types of infantry weapon. Moreover, even at that time in the methods of the tactical employment and organizational development of the tank forces trends appeared for turning them into an independent branch of troops. Thus, by the end of World War I the British and French armies had a definite organizational structure and had worked out the main principles for the combat employment and logistic support of the tank troops.

During the time of the war, there was a further technical improvement in the tanks. Their speed increased from 2-3 up to 10-13 km an hour, while range rose from 25-30 to 100-150 km. There was a sharp increase both in the number of tanks involved simultaneously in an operation as well as in the total number of fighting vehicles. While in 1916, only 32 tanks were involved in the offensive on the Somme River, in the Battle of Cambrai in November 1917, there were already 377 of them, and in the Amiens Operation in August 1918, there were 500. By the end of World War I the armed forces of the Entente had over 8,000 tanks, and another 25,000 had been ordered from industry for 1919. In addition to England, France and Germany, Italy and the United States also began building tanks.

The uniqueness and broad range of combat capabilities of a tank led to a situation where it from the very first days of its appearance on the battlefield began to influence the methods of organizing and conducting combat operations by the infantry units and formations as well as the development and combat employment of the other branches of troops.

Thus, the participation of fighting vehicles in an attack together with the infantry sharply increased the combat capabilities of the latter. An

offensive by infantry regiments and divisions with tanks was carried out in wider areas and at a more rapid pace. The involvement of tanks in combat operations required a further spreading out of the infantry battle formations and helped to improve the group formations which replaced the extended infantry lines. In a number of instances the employment of tanks made it possible to abandon the extended artillery softening up and this helped to achieve surprise in the attack.

The employment of armored vehicles on the battlefield created important objective prerequisites for conducting a non-stop offensive to the entire depth of the battle formations of the defending troops. In line with this the necessity arose of working out and employing new forms and methods for preparing and conducting combat operations. Particularly acute was the problem of organizing and carrying out cooperation between the tanks and the other branches of troops.

The employment of tanks also influenced the improvement of defenses. Thus, the German troops, starting in 1917, began to organize antitank defenses. Antitank guns and rifles appeared and armor-piercing bullets for machine guns. Initially they began to adapt mortars for combating the fighting vehicles and later employed antitank mines and other engineer obstacles. The combating of tanks was viewed as a most important mission for the artillery. In turn, for many years to come the tank determined one of the main areas in the development of artillery, that is, the development of different cannon systems as the basic means for combating armored targets. Finally, the appearance of tanks had a great influence also on the organization of logistic support for the troops, bringing to life such new services as the supply of fuels and lubricants, salvage, repair and overhaul of fighting vehicles.

The employment of tanks in World War I, as is known, was limited to tactical confines, however the prospects of their massed employment created serious prerequisites also for conducting operations in depth. Although this war did not provide examples of the employment of tanks on an operational scale, the combat capabilities residing in them had a great impact upon the further development of operational art.

* * *

After World War I, exceptionally great importance was given in the armies of all the major states to employing tanks in combat and in an operation. The tank troops in the interwar period began to develop in a direction of increasing the fleet of fighting vehicles, improving their quality and modernizing the organization.

While during the years of World War I, the total number of tanks in the belligerent armies did not exceed 9,000, by the beginning of World War II just the armies of the European states already had over 30,000 of them. The fighting qualities of the tank itself had also been seriously improved. The average speed of the main types of fighting vehicles rose up to 25-30 km an hour and range was up to 200-300 km. Individual tanks had a range of even over 300 km. In virtually all the states tanks appeared with shellproof armor.

As is known, during the years of World War I, the Russian Army did not have its own fighting vehicles. By the start of World War II, the Soviet Union held first place in the world in terms of the quality of new models of domestic tanks. The T-34 tank which was developed by a group of Soviet designers under the leadership of M.I. Koshkin was the best in the world over the entire war. The heavy KV Soviet tank also possessed high combat qualities and this was developed in 1939 under the leadership of Zh.Ya. Kotin.

An extended search for the most effective ways for the combat employment of tanks led in the mid-1930s to a recognition of the advisability of their dual employment in combat and in an operation. One portion of them was together with the other branches of troops to breach the enemy defenses while the other was to extend the breakthrough in depth.

In accord with the views on the nature of future operations, the role and place of the tanks in operations, definite organizational forms of the armored troops were established. The most important result in the development of the armored troops during the interwar period was their organization as an independent branch of troops in the armies of a number of states.

The ever-increasing role of tanks in combat and an operation inevitably led to an increased scope and a greater pace and dynamicness in combat. The development by Soviet military science of a theory of a combat and operation in depth was the most vivid manifestation of the impact of tanks on changing the methods of preparing for and conducting hostilities. If one were to speak as a whole, it is essential to emphasize that tanks had a significant impact upon the development of the theory and practice of military art as well as on the organizational development of the armed forces in all the main states of the world.

Regardless of the diverse viewpoints existing in the interwar period in the various countries concerning the nature of a future war, a majority of the military theorists recognized as inevitable an increased scope, pace and dynamicness of armed combat on land. And this could be achieved only by the massed employment of tanks and aviation. The theory of combat and an operation in depth was actually worked out considering the role of these weapons. A recognition of tanks as the most important means for increasing the maneuverability of combat on land necessitated a technical reconstruction of all the ground forces and primarily in a direction of increasing their mechanization and motorization. The implementing of these measures provided an opportunity for the advancing side to rapidly concentrate major forces for an attack while the defending side could sharply accelerate the preparation of the defenses. Ultimately mechanization and motorization of the ground forces led to increased dynamicness of combat as a whole.

The ongoing increase in the proportional amount of armored troops in the armed forces also influenced the further development of the other branches of troops. Thus, the infantry needed a significant amount of close combat weapons for combating the tanks. The artillery had to not only repel the attacks of the enemy combat vehicles but also carry out the task of continuous fire support for its own tanks. Subsequently, this led to the development of

self-propelled artillery. Tanks also influenced the improving of the engineer troops which, on the one hand, were confronted with the problem of developing more effective antitank weapons and obstacles and on the other the task of engineer support for tank combat operations. The rapid development of the armored troops was one of the crucial factors also causing the extensive introduction of radio communications in the troops.

The large amount of logistic support for the combat activities of the tank troops in the interwar period posed a series of major problems for the rear bodies of all levels from the battalion up to the center.

In the course of World War II, the growing role of tanks on the battlefield and their influence on the conditions and methods of fighting by the ground forces became particularly apparent. A study of the history of this war indicates that all of it occurred under the influence of the dominance of such weapons as tanks, artillery and aviation on the battlefields.

Certainly, success in combat and an operation was achieved by the joint efforts of all the Armed Services and branches of troops. Consequently, there can be no question of underestimating them. However, in the various stages of development of military affairs and in the course of combat and an operation the role of one or another branch of troops can substantially change. While at the end of 1941, we had just 1,954 tanks in the operational army, by November 1942 we already had 7,350 combat vehicles and in January 1945, just in the First Belorussian and First Ukrainian Fronts there were over 7,000 tanks and SAU.(5)

During World War II, the main states of the world produced around 279,800 tanks and SAU, that is, 30-fold more than in the years of World War I.(6) The history of no other so-called classic branch of arms or armed service knows such rapid development in a short historical time. For comparison sake, we might say, for example, that the total production of artillery during the years of World War II, in comparison with World War I, increased by 15-fold and aviation by only 10-fold.

The sharp increase in the number of tanks involved in operations was one of the major factors influencing the change in conditions, the character and methods of fighting by the units and formations in the ground forces in the course of World War II. Precisely the massed employment of tanks supported by artillery and aviation gave the hostilities in the last war great scope, fluidity and speed. To put it figuratively, tanks and aviation not only dealt a "death sentence" to the positional forms of combat but also carried out this sentence in the course of World War II. The combat experience of the last war showed that the high rate of advance, the fluidity of combat operations and the scope of offensive operations frequently were directly dependent upon the number of tanks and SAU involved in them. The more rapid the actions of the tank troops in an operation, the higher the rate of advance for the main forces of the advancing fronts. In his report at the 12th Session of the USSR Supreme Soviet on 22 June 1945, the Chief of the General Staff of the Soviet Army, Army Gen A.I. Antonov, pointed out: "The second half of the war has been carried out under the mark of the predominance of our tanks and SAU on the battlefields. This has made it possible for us to carry out operational

maneuvers of enormous scope, to surround large enemy groupings and pursue them until complete destruction."(7)

It can be definitely asserted that the problem of continuing an offensive to a great depth and at a rapid pace, in arising even in the course of World War I, during the years of World War II was actually resolved. The armored troops and aviation became the most important means of carrying it out.

The increased mobility and strike force of the ground forces and the massed employment of aviation, on the one hand, increased the capabilities for rapidly establishing large troop groupings and launching a strong initial attack and, on the other, created real prerequisites for conducting a maneuvering war. In addition, the increased maneuverability of the ground troops, the massed employment of aviation and the use of radio communications helped to significantly widen the spatial limits of the simultaneously conducted fighting, they gave the operations a deep and fluid nature and increased the pace of the fighting. The boundaries of cooperation were widened between the individual groups of ground forces advancing on axes that were significantly far apart.

It must also be pointed out that the extensive employment of armored troops and aviation as well as the mechanization and motorization of other branches of troops led to a change in the nature of the movement of the front line between the advancing and defending sides. While in the past it, as a rule, moved evenly along its entire length, during the years of World War II, due to the deep thrusts by the tank formations on individual axes, the front line moved a significant distance ahead.

The new conditions for conducting armed combat altered the importance of the time factor in a war. They demanded from the command the ability to foresee the course of rapidly developing events over a much longer segment of time than had occurred in wars of the past. The nonobservance of this condition led to a delay in the planned measures and the thwarting of them by the enemy.

The massed employment of armored troops in World War II substantially influenced the organization and conduct of the defensive, too. In defensive battles and operations the tanks not only united the battle formations of the combined-arms units and subunits, strengthening their antitank resistance, but also were the most important means for launching counterattacks and counterstrikes. This gave the defenses and active nature and increased their strength.

In assessing the past of tanks and considering the revolutionary changes which have occurred during the postwar period in the area of military affairs, it can be said with confidence that under present-day conditions, their role in combat and an operation has not declined. They, as before, are the main strike force of the ground forces and the most important means for conducting armed combat on land.

The role of the tank troops in a modern war is determined primarily by the high fighting properties of the combat vehicles themselves. At present, the tank troops have been completely equipped with modern combat equipment. Their

armament is based upon tanks which possess better combat capabilities than the fighting vehicles from the period of the Great Patriotic War.

The increased caliber of the cannons, the greater range of fire and muzzle velocity of the shells have strengthened the fire power of the tanks. The fire control equipment established on them make it possible to hit any enemy armored targets, as a rule, with the first round at a great distance. Their armored defense securely protects the personnel against bullets and shrapnel. The mobility of the combat vehicles has been increased and as a result of this the combat operations of modern ground forces have assumed an exceptionally fluid nature with a rapid advance to a great depth and at a rapid pace. Modern tanks, more than any other type of combat equipment, possess the ability to resist the injurious factors of nuclear weapons, to cross zones of radioactive contamination and immediately utilize the results of our nuclear strikes for going over to the offensive. They are capable of crossing water obstacles by fording amphibiously and under water. The equipping of the combat vehicles with night vision instruments makes it possible for the tank troops to fight at night and under the conditions of limited visibility. The increased capabilities of military air transport make it possible to carry certain types of armored equipment by air in the aim of exploiting the success deep in the enemy rear or establishing armored screens on the routes of advance of enemy reserves.

The high combat qualities of modern tanks help the ground formations and units in successfully carrying out combat missions in all types of combat. The formations and units are capable of quickly moving up to the combat area, going over to the offensive immediately after nuclear strikes, develop a rapid offensive in depth, destroy or capture enemy weapons of mass destruction, cross water obstacles without a pause, defeat large enemy groupings in meeting engagements and cross extensive zones of radioactive contamination. In cooperating with the rocket troops, airborne troops and aviation, the tank formations can fight independently a significant distance away from their own troops, rapidly penetrate into the deep enemy rear and quickly secure its complete defeat.

When necessary the tank troops are capable of firmly holding areas of terrain or important installations, they can conduct active defensive operations and with heavy fire deal a decisive defeat to superior enemy forces.

In conclusion it must be said again that at present the tank is a combat vehicle which most fully combines powerful weapons, great attack force, high maneuverability and the protection of the personnel against the effect of modern weapons. Such combat qualities of the tanks have sharply increased their importance in modern combat and an operation and have reinforced their role as the main assault force of the ground troops.

FOOTNOTES

1. F. Mitchell, "Tanki na voyne" [Tanks at War], Moscow, Voyenizdat, 1935, p 25.

2. "Sovetskaya Voyennaya Entsiklopediya" [Soviet Military Encyclopedia], Moscow, Voyenizdat, V· l 7, 1979, p 198.

3. "Mirovaya voyna v tsifrakh" [The World War in Figures], Moscow, Voyenizdat, 1934, pp 24-25.

4. In translation from the English, the word "tank" means a "container" or "vat."

5. "Istoriya vtoroy mirovoy voyny 1939-1945" [History of World War II of 1939-1945], Moscow, Voyenizdat, Vol 4, 1975, p 272; Vol 6, 1976, p 35; Vol 10, 1979, p 59.

6. "Velikaya Otechestvennaya voyna Sovetskogo Soyuza 1941-1945. Kratkaya istoriya" [The Great Patriotic War of the Soviet Union of 1941-1945. Brief History], Moscow, Voyenizdat, 3d Edition, 1984, p 498.

7. IZVESTIYA, 23 June 1945.

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WAYS OF MAINTAINING TANK ARMY BATTLEWORTHINESS IN OFFENSIVE OPERATIONS OF GREAT PATRIOTIC WAR

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[Article by Candidate of Military Sciences, Docent, Col V.N. Shevchenko]

[Text] The maintaining of the battleworthiness of tank armies on a necessary level in the course of offensive operations was one of the most important tasks for the command and staffs, the political and rear bodies. This was carried out by manning up the units and formations, by replenishing the combat equipment of the tank field forces, by strengthening the political-moral state of the troops and by promptly replacing materiel.

The manning up of the formations and units with rank and file, NCOs and officer personnel was caused by the losses suffered by the tank field forces in the course of an offensive. These depended upon the nature of the enemy defenses, their saturation with antitank weapons, the presence of enemy reserves in depth and the duration of the hostilities. During the war years, each tank army conducted from eight to nine offensive operations. Their duration, as a rule, was from 10 to 48 days.(1)

The greatest losses of personnel were suffered by the tank armies in completing the breakthrough of the enemy tactical defensive zone, in crossing intermediate defensive lines and in repelling enemy counterattacks and counterstrikes.

During the various war years, these losses differed. Thus, in the 1943 operations, when experience was just being gained in the combat employment of tank armies of uniform composition, the overall losses approaches 21.1 percent (the 4th Tank Army in the Orel Operation) and even 24.9 percent (the 1st Tank Army in the Belgorod-Kharkov Operation) of the initial number of personnel. But in the operations of 1944-1945, as a rule, they did not exceed 15 percent. An exception was the 1st Guards Tank Army in the Berlin Operation (Table 1). This was caused by the need to break through the defenses together with the 8th Guards Army on the Berlin sector and then fight in Berlin. It must be pointed out that approximately 90 percent of the losses was personnel from the motorized rifle subunits and units of the tank armies. The tank troops suffered fewer losses. The irrecoverable losses relative to the general

losses were, as a rule, 10-31.8 percent and the remainder were medical.

Table 1

Losses in Tank Army Personnel in Offensive Operations

Operation	Tank Army	Percent of Total Personnel Losses in Relation to Initial Strength
Orel	4th TA	21.1
Belgorod-Kharkov	1st TA	24.9
Proskurovo-Chernovtsy	1st TA	22.9
Iasi-Kishinev	6th TA	7.0
Vistula-Oder	1st Gds TA	14.5
	2d Gds TA	7.2
	3d Gds TA	8.7
	4th TA	10.3
East Prussian	5th Gds TA	17.5
East Pomeranian	1st Gds TA	12.4
	2d Gds TA	14.5
Berlin	1st Gds TA	21.8
	2d Gds TA	12.4
	3d Gds TA	14.7
	4th Gds TA	10.5

* The table has been compiled from data of the Central Archives of the Ministry of Defense.

The task of replenishing the personnel losses of the tank armies during the war years was carried out by several ways. The most important of these was to include a draft of reinforcements in their formations and units.(2) The draft companies were organized in the reserve units from personnel who had undergone training in the tank training regiments. The officer personnel, including the commanders of the vehicles and in heavy tanks (SAU) also the drivers, was appointed in the draft subunits from the officer reserves existing in the TOE of the reserve unit of the company.(3) The draft formations entered the tank armies largely in those instances when the field force was pulled back into the reserve of Hq SHC and prepared for a new operation.

In a number of operations (Korsun-Shevchenkovskiy, Budapest and Berlin), in individual stages of the offensive the mechanized formations of the tank armies were manned up by rifle troops and in certain operations (Proskurovo-Chernovtsy, Uman-Botosani, Belorussian) by partisans and the indigenous population of liberated oblasts. The basic source for replenishing the losses in personnel of the branches of troops was the reserve battalion of the tank army. Here they trained drivers, gunners and signalmen as well as soldiers and sergeants of other specialties. A definite reserve of drivers was also established in the army formations. In particular, in certain tank corps in

1943, a reserve of 40 tanks with crews and 100 motor vehicle drivers was introduced. Those jobs which did not require extensive training were filled by personnel from the motorized rifle troops of the tank field force.

At times, the tank armies included formations, units and subunits which were arriving from being brought up to strength. For example, in July 1944, the 4th Tank Army received the 93d Separate Tank Brigade, the 68th Antiaircraft Artillery Division and a motorized rifle battalion.(4)

Under the most complicated conditions of a combat situation, the motorized rifle units and subunits of the tank field forces were brought up to strength from the commandant and rear subunits.

Starting in 1944, the losses of personnel in the tank armies were made up chiefly by soldiers arriving from hospitals after recuperation. Here the commanders and staffs of all levels saw to it that the tank specialists were sent back to those units from whence they had come. The army hospitals were prohibited from treating lightly wounded personnel outside the army. This concerned first of all those tank troops which could be returned to battle in 15-20 days.

The tank armies were brought up to strength for officer personnel basically from the reserve units with the officers which had arrived from hospitals or sick leave as well as from military academies, schools and frontline courses for junior lieutenants.

The battleworthiness of tank armies also depended upon the political-moral state of the personnel and upon maintaining a high offensive drive in the troops. For this reason the main aim of party political work in the field forces was the firm and consistent carrying out of party and government policy and mobilizing the efforts of the men to successfully carry out the combat missions. The more complicated and tense the combat situation was, the more attention the commanders, political bodies, the party and Komsomol organizations gave to organizational and ideological work. The political workers, the commanders, generals and officers of the staffs in breaks between fighting held talks with the men and gave reports on the materials of the Sovinformburo [Soviet Information Bureau] summaries and orders of the people's commissar of defense. Of important significance was the popularizing of the heroism of Soviet soldiers and indoctrinating hate for Nazi1sm in the soldiers and officers.

The tank (motorized rifle) company and SAU battery were the center of party political work in the troops. For this reason the commanders, the political workers and the party organizations were constantly concerned with the correct placement of communists in the subunits. In the platoons and crews party or party-Komsomol groups were organized and agitators recruited and due to this there was continuity and effectiveness of party political work in a combat situation.

The replacement of combat equipment was a major area of maintaining the battleworthiness of the tank armies. New fighting vehicles were delivered to the field forces in those instances when units and formations arrived from

being brought up to strength, drafts of recruits or crews of tank columns. For example, the 1st Guards Tank Army in various stages of the Lwow-Sandomierz Operation received around 200 new tanks with crews and this made it possible to it to continue fighting without an operational pause to the entire depth of the operation.(5)

In the course of offensive operations there were instances when the tank armies received tanks together with their crews from the tank units and formations being removed to the reserve of the front or Hq SHC. For example, in the Orel Operation the 4th Tank Army during the offensive against Khotynets received tanks from the V Separate Tank Corps of the 11th Guards Army which was being shifted to the reserve of the front.(6) During the same operation, the 2d Tank Army received tanks from the 3d Guards Tank Army which was being withdrawn to the Headquarters reserve.(7)

The basic source for replenishing the tank armies with combat equipment was the continuous repair of it in the course of the operation with the aid of TOE and attached repair facilities. We have merely to point out that while industry over the war years turned out 1,400 tanks and SAU,(8) the repair facilities over this time rebuilt over 400,000 tanks and SAU.(9)

During the war, the system of tank maintenance was significantly changed. While prior to the attack of Nazi Germany on the USSR the repair of armored equipment was basically carried out using stationary facilities, during the period of the war great importance was given to mobile repair facilities. The repair methods were also improved. From November 1942, for example, the unit method of repair began to be widely employed. For establishing a stock of units, from 1943 the fronts began organizing tank unit repair plants.(10) Over the entire war, measures were carried out to increase the production capacity of the organic repair facilities. These were aimed chiefly at providing narrow specialization and production independence. As a result, the average-daily execution of repairs on tanks and SAU in the tank armies rose from 13-25 units in 1943 to 22-58 in 1945.(11) In a majority of the operations, the repair facilities of the tank armies rebuilt from 80 to 90 percent of the combat vehicles.

The number of tanks returned to battle in the course of an operation often significantly exceeded the number of combat vehicles at its start. This was explained by the fact that the vehicles which went out of service several times during an operation were returned to the battle formations of the tank army units and formations. For example, the 3d Guards Tank Army prior to the start of the Vistula-Oder Operation had 924 tanks and SAU. Over the 19 days of hostilities, it lost 520 combat vehicles (56 percent) as a result of battle damage and technical malfunctions, including 181 (20 percent) permanently. As a total in the field force over the 19 days around 1,200 repairs of all types were carried out, that is, each tank was repaired almost twice.(12) In the 6th Guards Tank Army in the course of the Manchurian Operation from 9 through 31 August 1945, 1,265 tanks and SAU were repaired, including: 928 vehicles in routine repairs, 334 in medium repairs and 3 in major overhauls.(13)

The experience of the war shows that in the rebuilding of damaged equipment, the greatest effect is achieved in those instances when the repair facilities were employed centrally on the axis of the main thrust and were brought as close as possible to the battle formations.

It must be pointed out that in maintaining the battleworthiness of the tank armies, an important role was also played by correctly organized operation of the combat equipment and a requisite consideration of the terrain and seasonal conditions. As combat experience was gained, these conditions were observed more. Thus, if the breakdown of combat vehicles for technical reasons is shown quantitatively in combat tank-sorties, an analysis of the archival data indicates that in 1944, this was from 10.6 to 3.2 percent, while in January-May 1945 it was only 1.25 percent.(14)

The battleworthiness of the tank armies was also maintained by prompt replacement of material supplies. The effective carrying out of this task determined the length of the combat operations, the depth of advance and the rate of advance of the tank field forces.

Usually by the start of offensive operations, supplies of ammunition, fuels, lubricants and food had been established in the tank armies. For the rifle weapons, these supplies were 1.5-2.7 units of fire and for the artillery and tank cannons 1.9-3.6 units of fire.(15) This was basically enough for fighting to the depth of the combat missions set for the tank field forces, as on an average cartridge consumption per operation did not exceed 1.2 units of fire; for mortar shells it was 3.7; for artillery shells 1.6; rounds for tank cannons 1.9 units of fire.

As for fuels and lubricants, their expenditure depended upon the nature of the fighting, the state of the roads, the season as well as the skills of the combat vehicle drivers. From the experience of the most important offensive operations, this varied within limits of 1.7-8.6 loads for diesel fuel and 2-9.8 loads of aviation gasoline. The fuel supplies by the start of an operation were not more than 2 loads at the army dumps and 2.5-3 loads at the corps dumps. For this reason, the transporting of the fuel to the dumps and the prompt allocation to the formations and units were of exceptionally important significance. As the experience of the war indicated, the prompt supply of the tank armies with materiel was determined by the creation of stocks on the eve of the operation sufficient for supplying the army for the entire operation; by the skillful use of all types of transport (motor vehicle, rail, air and pipeline); by the careful guarding and control of the delivery routes; by maximum observation during the operation of the transport principle of each level "on its own"; by the establishing of a reserve of materiel on wheels; by the maneuvering of materiel; by the use of local resources and captured equipment.

Thus, the maintaining of the battleworthiness of tank armies during the offensive operations of the Great Patriotic War was a complex problem. The ways worked out and tested by combat practice for solving this can largely be employed in the combat training of tank troops at present.

FOOTNOTES

1. TsAMO SSSR [Central Archives of the USSR Ministry of Defense], folio 315, inv. 4440, file 707, sheets 1-17.

2. A.I. Radziyevskiy, "Tankovyy udar" [Tank Attack], Moscow, Voyenizdat, 1977, p 243.

3. "Stroitelstvo i boyevoye primeneniye sovetskikh tankovykh voysk v gody Velikoy Otechestvennoy voyny" [Organizational Development and Combat Employment of the Soviet Tank Troops During the Years of the Great Patriotic War], Moscow, Voyenizdat, 1979, p 94.

4. A.I. Radziyevskiy, op. cit., p 243.

5. TsAMO, folio 299, inv. 15093, file 1, sheet 598.

6. Ibid., folio 324, inv. 4761, file 2, sheet 21.

7. Ibid., folio 307, inv. 4156, file 6, sheet 282.

8. "Istoriya KPSS" [History of the CPSU], Moscow, Politizdat, Vol 5, Book 1, 1970, p 644.

9. "Stroitelstvo i boyevoye primeneniye...," p 336.

10. Ibid., p 316.

11. A.I. Radziyevskiy, op. cit., p 228.

12. TsAMO, folio 315, inv. 4457, file 32, sheets 24-25.

13. Ibid., folio 339, inv. 5191, file 34, sheet 226.

14. Ibid., folio 38, inv. 252698, file 2, sheets 33-34.

15. A.I. Radziyevskiy. op. cit., pp 231-232.

10272
CSO: 1801/53

IMPROVED RADIO COMMUNICATIONS FOR RADAR SUPPORT OF AIR OPERATIONS IN GREAT PATRIOTIC WAR

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 9, Sep 86 (signed to press 26 Aug 86) pp 68-73

[Article by Candidate of Military Sciences, Col B.B. Lariokhin and Candidate of Military Sciences, Lt Col I.A. Tretyak]

[Text] An extensive program of measures to strengthen the defense capability of the USSR and the combat might of the Red Army, as worked out on the basis of the decisions of the 18th VKP(b) [All-Union Communist Party (Bolshevik)] Congress made it possible to commence the equipping of the Air Forces with what was then modern aviation equipment. Along with the new types of aircraft, the Air Forces began receiving the RAT, RA, RAF-KD and RSB-F ground radios, the RSI-4, RSI-bis and RSR-1 aircraft radios and other equipment. However, by the start of the Great Patriotic War the process of rearming the troops with communications had not been fully completed. The signals subunits and units were maintained using peacetime TOE and possessed a very limited amount of equipment. The TOE signals subunits (separate companies) existed only on the staff of the long-range bomber aviation and the air forces staffs of the districts, while the men and equipment assigned to control the air formations and units were subordinate, respectively, to the commanders of the air bases and the airfield maintenance battalions (bao). The absence of aircraft radios on a majority of the fighters and ground attack planes virtually excluded the possibility of organizing air radio nets in these branches of aviation. The existing situation was also explained by the underestimation of the role of radio communications, as wire communications and mobile communications facilities were considered the basis for troop control.

The surprise attack by Nazi Germany commenced with massed air operations against our airfields. During the first days of the war, the enemy destroyed a large amount of permanent wire communications lines and this had a negative effect upon the control of the combat operations of the air units and formations.

The basic method for organizing radio communications during this period was a radio net with a large number of users and this reduced the effectiveness of control. Moreover, the commanders and officers of the air staffs in a number

of instances consciously limited the employment of radio equipment out of the fear that the enemy would get a fix on the operating radios and destroy the discovered command post.(1)

The Order of the People's Commissar of Defense of 23 July 1941 "On Improving Signals Operations in the Soviet Army" played an important role in improving command of aviation. The order demanded that the commanders and staff officers of all ranks themselves learn and teach their subordinates the art of commanding troops by radio. A number of specific measures was immediately carried out to meet these demands in the Air Forces, including: retraining commenced for signal troops called up from the enterprises of the People's Commissariat of Communications; liaison officers began to be assigned without fail to the staffs of the combined-arms armies from the air formations and so forth.

The intense work produced positive results: the radio began to be employed ever-wider for control of aviation on the ground and in the air. By the autumn of 1941, in all the air field forces there were, as a rule, four radio nets in operation: command, liaison with ground troops, control and guidance of fighter aviation and air observation, warning and communications (VNOS) with the latter then being renamed the radio net for air defense warning of a front. The functioning of the radio nets gradually improved in the direction of greater continuity and stability of control. This was greatly aided by the increased deliveries of modernized radios.

The organization of radio communications itself was improved with the frequencies being chosen depending upon the time of day and the power of the transmitters and were allocated between the radios of the staffs and the command posts of the formations; the work of the ground and aircraft transmitters was planned in accord with the time of air operations and so forth. The pilots began to pay more attention to maintaining contact with the ground, thereby obtaining necessary information on the air and ground enemy. This told immediately on the results of operations. The obvious successes altered the attitude toward radio communications on the part of the flight personnel and ground control officers.

In the aim of improving the organizational structure of the Air Forces signal troops and increasing the effectiveness of signals, under the order of Headquarters of 25 January 1942, the separate companies of the Air Forces staffs of the fronts were changed into battalions while separate signals companies were incorporated in the TOE of the air forces staffs of the combined-arms armies and the formations of the long-range bomber aviation (the formations and units of frontal (tactical) aviation as before were supported by the signals subunits of the air bases and the bao). The increase in the TOE size of signals equipment by the reorganization carried out made it possible to have two or three radios at the command post of the front air forces and one or two at the command post of the formations. This significantly broadened the possibilities of the air forces commanders of the fronts who now from their own command posts by radio could summon the air units for attacking enemy troops, retarget the assault groups and allocate targets between them; coordinate the operations of fighters on alert in the air and at airfields.

The organizing of air armies had a positive effect upon improving the organizational structure of the signals troops and these armies included all the formations and units of the frontal and army aviation. From May 1942, the signals subunits were shifted from the combined-arms armies and rear bodies to the air commanders. In the air armies they organized separate signals regiments and VNOS radio companies and in the air divisions there were signals companies. The long-range aviation organized a made-up unit of the 29th Separate Signals Regiment and radio naviation support. The presence of these units and subunits directly under the chiefs of the signal troops of the air armies had a positive impact upon the state of communications. The Order of the People's Commissar of Defense of 1 October 1942 put into effect the "Instructions on Radio Control, Warning and Guidance of Aviation."

The process of improving the organization of communications in aviation can be clearly traced from the example of the air army involved in the Battle of Stalingrad. There were 29-25 radios in the separate signals regiment and the other subunits directly under the chief of the army signals troops. The available radios were provided as follows: the staff of the air army (this was the rear control post), the command post of the commander, eight command posts of the air division commanders, eight base airfields of the air units and four interception posts (PN) deployed in the battle formations of the ground troops. A signals center was set up under the army staff.

The providing of radios to the control posts and particularly the PN immediately told on the results of fighter operations. For example, in the second half of October 1942, 125 interceptions were carried out just from a PN of the 8th Air Army and here 37 enemy aircraft were downed.(2)

In the signals system of the 8th Air Army, they established an air reconnaissance radio net which provided for the reception of intelligence data from the crews of the reconnaissance planes by the command post of the front and the command post of the army commander as well as a single radio net for the control and guidance of the fighter and ground attack aviation. This replaced the ubiquitously operating radio net for the control and guidance of fighter aviation and began to be employed not only for guiding fighters to air targets and ground attack planes and bombers to ground ones but also for summoning aviation from the command post of the commander. The front's air defense warning radio net was substantially enlarged by installing receivers at the command posts of the formations and at all airfields.

The further improvement in the organization of radio communications was continued in the course of air operations during the major operations of the second period of the war. This was largely aided by the gradual increase in the number of radios in the signals subunits and units of the air armies. Thus, during the counteroffensive by our troops at Stalingrad the 8th Air Army alone had 20 control posts at which 40 radios were operated. For controlling the actions of the army's formations involved in the air blockade of the surrounded Nazi troop grouping, 15 control and interception posts (PUN) were organized and here the radios were employed not only for guiding fighters and ground attack planes to targets, but also for transmitting information on the ground, air and meteorological situations to the superior command posts and

for providing coordination of aviation with the ground troops (see the diagram).

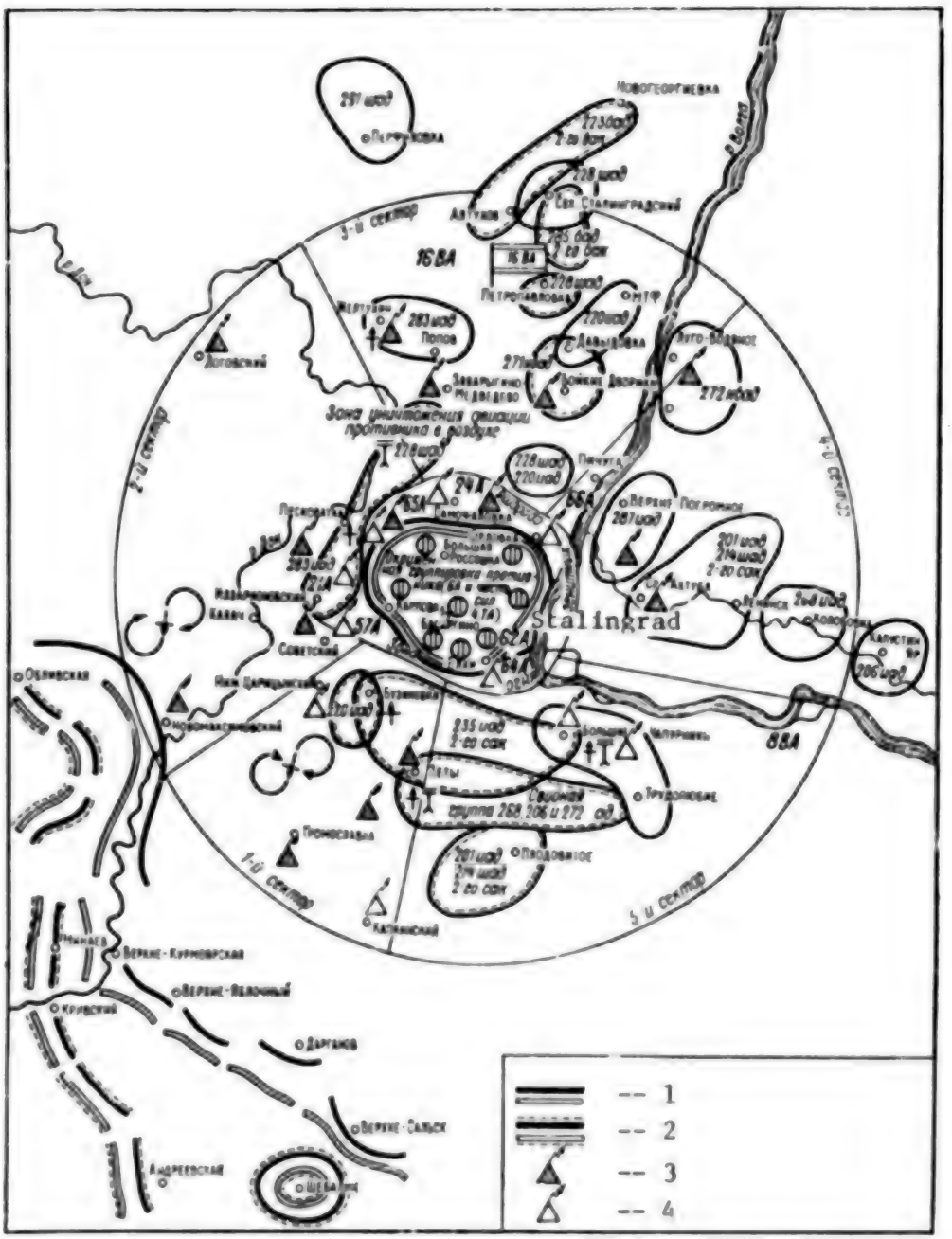

Diagram of Position of Aviation Control and Guidance Posts in Course of Counteroffensive by Soviet Troops at Stalingrad

Key: 1--Front line and air basing on 30 November 1942
2--Front line and air basing by 1 January 1943
3--Control and guidance radios of air forces
4--Control and guidance radios of ground troops

For providing command of the formations and units in the air engagements over the Kuban on the level of the air forces of the Northern Caucasus Front (4th and 5th Air Armies), two additional radio nets were organized: for information from the staffs of the air armies and for controlling the fighter and ground attack aviation over the battlefield. The information radio net began to provide a reciprocal exchange of data on the ground and air situation and this was extremely essential for the commander of the air army in adjusting his plans for combat operations. A distinguishing feature in the second radio net was the fact that it could be employed to control fighters both covering the troops and installations of the front as well as escorting the battle formations of ground attack planes and bombers. This was immediately felt in the results: just from 29 April through 10 May 1943, 285 air battles were carried out employing radio guidance and 207 enemy fighters and 121 bombers were downed.(3)

Air operations in the Kursk Battle and in the subsequent operations showed the necessity of establishing separate radio nets for each of the branches of aviation in the interests of increasing the effectiveness of command. For this purpose in the 1st Air Army the common radio network for the control and guidance of the fighter and ground attack aviation from July 1943 was actually split into three: one provided control of the ground attack planes over the battlefield, the second for just fighters fighting for air supremacy and the third for ground attack planes, bombers and their fighter escorts. The availability of the separate radio nets made it possible to improve control over aircraft groups of different tactical purpose. Here reciprocal interference was reduced and there was an opportunity to better inform the pilots on the ground and air situation and more effectively provide target designation, interception and reassignment. The new feature in organizing communications of this air army was the fact that each fighter and ground attack air corps already had its own communications centers, radio nets (command, control and interception) and receivers operating on the wavelength of the radio net for the front's air defense warning.

The units and subunits of the air forces signal troops entered the third period of the war up to full strength in personnel and communications equipment. The troops had begun receiving the modernized RAF-KV-4 and RSB-3s ground radios with changed transmitter wave bands and this made it possible to connect the radios with the Karbid and Bekan printers. Reconnaissance aviation received the improved RSR-2bis, the bombers received the RSB-3bis with increased depth of modulation and a range of radio telephone communications of about 120 km, while the fighters and ground attack planes received the RSI-6 with better performance. Work was actively carried out to develop prototypes of aircraft ultrashortwave radios. The significantly increased deliveries of radios made it possible for the chief of the Signals Directorate of the Soviet Army Air Forces to establish a reserve from which, when necessary, signals subunits were provided for the period of operations to the chiefs of the air army signal troops.

The search for the most effective ways to employ communications equipment led to the appearance of new radio nets in the frontal aviation: for the staff of the air army; for calling in aviation; for cooperation between the ground

attack, bomber and fighter aviation. With operations of an air army on separate axes, they began to establish several radio nets for the same purpose.

The establishing of corps signals centers along with the army ones made it possible to have: for the commander of an air army, direct radio and wire communications with the command post of the front, the command posts of the combined-arms armies, the rear and auxiliary PO of the air army, the command posts and staffs of the air corps; the commanders of air corps at their own command posts had radio contact with their own staffs, the command posts and staffs of the air divisions as well as wire contact with the command post of the air army commander, the auxiliary PU of the air army and with the observation posts of the commanders of the cooperating combined-arms armies; the commanders of air divisions had radio and wire contact with the command posts of the air regiments. In August 1944, in the 17th Air Army (Third Ukrainian Front) the fighter divisions already had their own signals centers and radio net. This experience was considered in preparing for the Berlin Operation when in the 16th Air Army the signals centers and radio nets were organized in the ground attack air divisions. Such an organization ensured the possibility of centralized command over massed air operations.

The long-range aviation also established new radio nets: control of crews in battle formation; reports on the results of carrying out the combat mission (fire); control of crews in the aircraft area (take-off).

All the measures carried out made it possible to reduce the load for the existing radio nets, to lower mutual interference and establish a more flexible, dependable and stable system of radio communications for controlling the combat operations of all branches of aviation.

In the course of the war, for controlling aviation they began to use radars more and more widely. In particular, these were employed for guiding fighters to air targets. The first interceptions using ground radars were in the air defense fighter aviation in the Battle of Moscow (December 1941) and produced good results. The Redut radar made it possible to determine the range to the air targets and their azimuths. But at the same time, the radar had a number of drawbacks: it could not determine the altitude of the aircraft, identification of air targets was lacking and the transmitter and receiver were located separately in two bands.

In the course of working to improve the Redut radar, the specialists succeeded in resolving the important problem of combining the transmitting and receiving antennas and this led to a significant simplifying of the radar and to greater accuracy in determining the target azimuth. A single-antenna radar began to be produced in two versions: mobile (RUS-2) and packed (Pegmatit).(4) At the end of 1943, the troops began receiving ground and air friend-foe identification radars. Combined with radio communications, the radars became a dependable means for detecting air targets and guiding the fighters to them.

Initially, the guidance of fighters to the targets was carried out by the crews of the radars which were part of the VNOS subunits of the front air defenses. Most often these were separate radars from the air defense system

of the most important front facilities (centers of communications, head dumps, the areas for the unloading and concentration of assault groupings and so forth). However, combat experience showed that for effective and efficient guidance of fighter aviation the air army had to constantly have its own radars. For this reason, in 1943, for the period of front offensive operations, the radars began to be assigned to the air armies, and in 1944, were incorporated in their TOE. For the period of operations these were assigned to the fighter air corps carrying out the missions of covering the assault groupings of ground troops. But here they were employed according to the principle of individual detection and interception radars without coordination with other radars and this did not provide continuous and dependable fighter control.

This shortcoming was considered in the 1945 Berlin Operation where the radars for the first time were employed on a centralized basis. For this purpose in preparing for the operation, the number of radars, for example, in the 16th Air Army (First Belorussian Front) was increased up to nine and organized in three radar detection and interception centers (one army and two corps).(5) The use of radars in the system of centers made it possible to establish a radar field with a detection range of 100-120 km at medium altitudes. This provided a continuous determining of the coordinates for all airborne targets appearing in it, their type, number (approximately) and dependable further guidance of our fighters.

The early detection of the scrambling of enemy aircraft from airfields using radars of the corps radar centers provided an opportunity for our fighters in a majority of instances, in covering the troops, to abandon continuous patrolling and basically employ the method of their interception from a ground alert status. This virtually excluded "barren" sorties and helped to thriftily employ the fighter air forces, to establish numerical superiority over the enemy at the very outset of combat and when necessary build up the fighter forces.

The functions of the army radar center crew were to provide observation and information on the air situation in the zone of the front; to warn of enemy air flights; to guide the fighters to enemy aircraft breaking through into the rear; monitoring the flights of our aircraft; providing aid to crews in restoring orientation and in guidance back to landing airfields; in setting tasks and directing the work of the corps centers.

Thus, an analysis of the experience of the Great Patriotic War shows that radio was the basic means of communications in the Air Forces. The basic directions for improving radio communications and radar support for aviation were: modernization of the existing ground and aircraft radios and the development of qualitatively new ones, increasing their production and deliveries to the troops, the constant search for effective forms and methods of employment; improving the organizational structure of the Air Forces signal troops.

FOOTNOTES

1. See: Ye.V. Koyander, "Ya -- 'Rubin', prikazyvayu...," [I, Ruby, Order...], Moscow, Voyenizdat, 1978, p 72.

2. P.I. Pelyukhov, "Aviatsionnaya svyaz v gody voyny i mira" [Aviation Communications in Wartime and Peacetime], Monino, 1968, p 48.

3. P.I. Pelyukhov, "Analiz organizatsii svyazi dlya upravleniya IA nad polem boya v Velikoy Otechestvennoy voyne 1941-1945 gg." [Analysis of the Organization of Fighter Aviation Control Communications Over the Battlefield in the Great Patriotic War of 1941-1945], Monino, 1947, p 71.

4. See: VOYENNO-ISTORICHESKIY ZHURNAL, No 8, 1962, p 25.

5. See: I.V. Timokhovich, "Operativnoye iskusstvo sovetskikh VVS v Velikoy Otechestvennoy voyne" [Operational Art of the Soviet Air Forces in the Great Patriotic War], Moscow, Voyenizdat, 1976, p 283.

10272
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IMPORTANCE OF COMBAT EXPERIENCE IN LAKE KHASAN AREA AND ON KHALKHIN-GOL RIVER FOR DEVELOPMENT OF SOVIET MILITARY ART

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 9, Sep 86 (signed to press 26 Aug 86) pp 73-77

[Article by Candidate of Historical Sciences, Col M.V. Novikov]

[Text] At the end of the 1930s in the Far East, the Japanese militarists twice endeavored to test the defense might of the Soviet Union. The first time this occurred in the Lake Khasan area (29 July-11 August 1938) and the second on the frontier of Mongolia to the east of the Khalkhin-Gol River (11 May-16 September 1939).

Regardless of the brief time and limited territorial scope, the fighting in the Lake Khasan area made it possible to draw definite conclusions which were of importance for the further development of Soviet military art. In the course of this, the troop organization adopted in the mid-1930s was tested out, the correctness was affirmed for the main provisions of the 1936 RKKA [Worker-Peasant Red Army] Provisional Field Manual (PU-36) concerning the preparations for and conduct of an offensive, and definite experience was gained in organizing cooperation between the infantry, artillery, tanks and aviation and organizing artillery and air softening up. Here the combat experience showed that superiority in combat equipment does not ensure success on the offensive, if precise coordination is not organized between the branches of troops and armed services. The important role of artillery was also confirmed. Even heavy bomber strikes (with a bombing density up to 80 tons per square kilometer) could not completely neutralize the weapons of the defending troops and ensure a rapid advance of the infantry and tanks. Artillery had to be employed for this without fail. Particularly effective here was the firing of direct laying guns. Unfortunately, artillery support for the infantry and tank attack, as was planned in the "RKKA Artillery Combat Manual" (Part 2, 1937) was not employed and this was a major shortcoming. The lack of spotter aviation and sound ranging equipment also impeded the fight against enemy artillery.

The employed T-26 and BT tanks with bulletproof armor were easily hit by the fire of antitank cannons and suffered great losses and this required the supporting of their operations by aviation and artillery in the aim of neutralizing the enemy antitank weapons.

For the first time Soviet aviation gained definite experience in making massed raids for neutralizing weapons and artillery, for destroying defensive works, for annihilating enemy reserves located deep in the defenses.

As a whole the fighting in the Lake Khasan area confirmed the correctness of the provisions of the manuals and instructions and disclosed a series of flaws in the combat training of the troops, particularly the command personnel, as well as shortcomings in individual types of weapons and combat equipment. To one or another degree all of this was considered in the further improving of the Soviet Armed Forces.

In the area of the Khalkhin-Gol River by mid-August 1939, the Japanese troops had two infantry divisions, an infantry brigade, two tank regiments, a Manchurian cavalry division, several separate artillery and combat engineer regiments with a total of around 75,000 soldiers and officers, 500 guns and mortars, 182 tanks and over 300 aircraft. The opposing army grouping of Crps Cmdr G.K Zhukov had a single motorized rifle divisions and two rifle divisions, a rifle-machine gun brigade, an airborne brigade, two tank brigades and three motorized armored brigades, several separate artillery units as well as combat engineer and pontoon bridge battalions. Two cavalry divisions and one cavalry regiment as well as other units of the Mongolian People's Army in operational terms were subordinate to the group commander. The total strength was around 57,000 men, 543 guns and mortars, 498 tanks, 385 armored vehicles and 515 combat aircraft.(1)

The Soviet-Mongolian Command decided to anticipate the enemy which had intended to go over to the offensive on 24 August. The plan for the forthcoming offensive operation came down to tying the enemy down from the front, and to surrounding and destroying its troops between the Khalkhin-Gol River and the state frontier by flanking attacks. In accord with this plan, three troop groups were organized: southern, central and northern, as well as a reserve. For confusing the enemy, measures were carried out to prepare for the defensive, the appropriate pamphlets were issued and false orders were sent out for lumber, winter clothing and so forth.

At 0545 hours on 20 August, 150 Soviet bombers escorted by fighters made a heavy bomb attack against the enemy defenses. Then, after artillery softening up lasting 2 hours and 45 minutes, the aircraft made a repeat attack while the artillery concentrated all fire power on the forward edge.(2)

As a result of 4 days of intense fighting, by the end of 23 August, the main forces of the 6th Japanese Army had been surrounded and by 27 August had been split into two parts, with the southern grouping destroyed. By the morning of 31 August, our units had also eliminated the northern grouping and as a result of this all Mongolian territory was completely cleared of invaders.(3) In this fighting an important role had been played by aviation and artillery in addition to the infantry, the direct laying guns and tanks, including flamethrower, had fought successfully. On 16 September 1939, fighting ceased as the Japanese government through diplomatic channels proposed a truce to the Soviet government.

The defeat of the Japanese aggressors on the Khalkhin-Gol River demonstrated the strength of the Soviet Armed Forces, the total dedication of their personnel to the Communist Party and Soviet government, the high combat skill and courage of the men, as well as the faithfulness of our nation to concluded treaties and to their international duty of defending the freedom and liberty of the fraternal Mongolian people.

The Soviet troops gained their first experience in organizing and conducting an army offensive operation in a desert-steppe terrain with the massed employment of tanks and aircraft and ending with the encirclement and destruction of the enemy. In this operation the tanks and armored vehicles together with the motorized infantry and artillery for the first time were employed for carrying out operational tasks as the main strike force of the flank groupings carrying out the encirclement maneuver.

A new feature in operational art was the establishing of an external perimeter of encirclement by the tanks, armored vehicles, motorized infantry and artillery; subsequently this was widely employed in the operations of the Great Patriotic War. From the experience of this operation one must conclude that rapid and decisive actions by the outflanking groups were essential for the quick encirclement of the enemy with clear cooperation between them and the troops advancing from the front. The destruction of the surrounded grouping had to be carried out not by squeezing the ring of encirclement but rather by splitting it with the subsequent piecemeal destruction. At the same time, the operation showed that for breaching deliberate defenses, tanks could be employed only in close cooperation with the infantry and with secure support by the artillery and aviation. It was more effective to employ tanks for exploiting the success, for outflanking (enveloping) exposed or poorly defended flanks. However, in these instances, without infantry and effective support from artillery, tank operations could involve great losses. Experience confirmed the importance of artillery, as superiority in tanks and aircraft contributed only to rapid encirclement and could not ensure the quick destruction of the enemy.

The results of the conducted operation made it possible to draw a number of conclusions on the development of tactics. Confirmed was the correctness of the provisions of the Temporary Field Manual (PU-36), the Infantry Field Manual (BUP-38) and the Instructions on Deep Offensive Combat published in 1935 concerning deep offensive combat. At the same time, the need arose to make certain adjustments. In particular, due to the increased power of the defenses and the saturating of the latter with automatic weapons and artillery, it was essential to reduce the width of the zone of advance of a division and the front of advance of the regiments and battalions. The experience of the defensive fighting showed the effective employment of tanks and armored vehicles which had been dug in for firing from a halt and for counterattacks.

The experience gained dictated the necessity of certain changes in the configuration of the battle order. Thus, the single-echelon configuration of a rifle division envisaged in PU-36 on an offensive did not ensure the building up of forces.

The more effective forms and methods of combat discovered in the course of the fighting on the Khalkhin-Gol River were employed in the field manuals of subsequent years.

In terms of the employment of artillery, experience showed that the fire of guns with a caliber up to 152 mm employed for the first time for direct laying was very effective for neutralizing enemy weapons in breaching its defenses. The conclusion was also drawn on the need to increase the number of barrels per kilometer of front in comparison with the existing standards (a density of 30-35 guns per kilometer of front in accord with Article 187 of PU-36 was not sufficient).

The successful experience of the operations of the tank formations contributed to the incorporation of the draft 1939 Field Manual of a new special section "Combat Employment of Tank Formations" and this pointed out that "tanks can be employed not only in joint operations with the infantry but also for carrying out independent tasks."(4) The necessity was recognized of increasing their density up to 40 tanks per kilometer of front.

The increased role of the engineer troops was confirmed and they in the course of preparing and conducting an offensive operation ensured the building of crossings (including bridges with a roadway below the water surface which were employed for the first time), roads, column tracks, command and observation posts, they reinforced the terrain, they were concerned with water supply and camouflage and when necessary fought like rifle troops. However, there were not enough combat engineers in the regiments and divisions for carrying out all this work. There was an underestimation of radio communications which was considered to be an alternate means. Nevertheless, wire communications failed in combat and this impeded troop command. Shortcomings were also discovered in the work of the staffs: insufficient speed and clarity in working out combat documents, slowness in encoding calls, the inability to use radios and poor topogeodetic support. All of this to one degree or another was considered in the subsequent training of the staffs.

Precise work by the rear services contributed largely to the success of the offensive operation. Here difficulties were surmounted related to delivering a large amount of various freight over a distance up to 750 km. The experience gained here was not only of operational but also operational-strategic significance. It was employed and underwent further development during the years of the Great Patriotic War, in particular in preparing the troops of the Transbaykal Front for the 1945 Manchurian Offensive Operation.

Since the territorial formations and units were significantly inferior to regular ones in terms of the training level, a decision was taken to eliminate the territorial manning system at the end of 1939 and incorporate changes in the organizational structure of the formations and units. As is known, in 1939, a predominant number of the rifle divisions was maintained according to the 1935 TOE. However, the 57th and 82d Divisions which were organized in June-July 1939 had not one but two artillery regiments. The combat carried out confirmed the advisability of such an increase in the artillery and this was established in the TOE of a rifle division as of 13 September 1939. According to this an antitank battery and a mortar platoon were to be

incorporated in a rifle regiment. In a rifle battalion, the number of 82-mm mortars was increased from two to four.

Combat experience of Soviet aviation made it possible to adjust and concretize its missions in supporting the actions of ground forces on an offensive. Thus, for the first time the draft of the 1939 Field Manual contains such concepts as aviation softening up and support.(5) The experience gained in the massed employment of aviation for winning air supremacy and supporting the actions of ground troops was considered in working out the Fighter Aviation Field Manual (BUIA-40) and the Bomber Aviation Field Manual (BUBA-40) approved in January 1940.

For the first time on a mass scale, combat equipment was tested out: new models of small-arms, guns, tanks and aircraft. The AVS-36 automatic rifle, for example, was difficult to use and produced many misfires. It was replaced by the more dependable semiautomatic rifle of F.V. Tokarev of the 1940 model (SVT-40). The Maksim medium machine gun was heavy and difficult to move in the course of an offensive and the water cooling impeded its employment in desert-steppe terrain. For this reason an air-cooled medium machine gun was adopted designed by V.A. Degtyarev of the 1939 model (DS-39) with significantly lower weight. However, at the start of the Great Patriotic War, because of design shortcomings, it was taken out of use. The 45-mm antitank cannon of the 1937 model, the 76-mm field cannon of the 1927 model and the 122-mm cannon of the 1931/37 model. The Japanese weapons of similar caliber showed a greater range of fire in comparison with the Soviet 76-mm cannons of the 1902/30 model, the 107-mm cannons of the 1910/30 model, the 122-mm howitzers of the 1910/30 model and the 152-mm howitzers of the 1909/30 model. This helped to accelerate the adoption in September 1939 of the 122-mm and 152-mm howitzers of the 1938 model which were superior in basic performance to similar-caliber Japanese guns. The 76-mm cannon of the 1936 model (F-22) underwent substantial modernization. The new 1939-model cannon (USV) was lighter in its firing and traveling position and its rate of fire had been increased. Also accelerated was the adoption of the 37-mm automatic antiaircraft cannon of the 1939 model and the 85-mm semiautomatic antiaircraft cannon of the 1939 model with a range of up to 10,230 m in altitude (in comparison with 9,500 m for the 76-mm cannon of the 1938 model). Also proving effective were the 82-mm mortars of the 1937 model and the 120-mm mortars of the 1938 model. This helped in their further extensive use in the troops. Also accelerated was the commissioning in December 1939 of the T-34 tank with shellproof armor, the best tank of World War II.

Combat operations in the air showed that the main thing for fighter air combat is not maneuverability but rather speed. This important conclusion was important in having our nation completely abandon the development of biplane fighters and switch to producing high-speed monoplanes. The experience of employing fighter aviation showed the importance of using radio communications. This contributed to its further development and extensive introduction in all types of aircraft.

The fighting of the Soviet Armed Forces on the Khalkhin-Gol (as in the Lake Khasan area) in terms of its scale was of a comparatively limited nature and did not make it possible to completely and thoroughly test out the theoretical

concepts of a deep offensive operation and combat. However, confirmed were such ones as the necessity of massing the men and weapons on the crucial sector, the importance of close cooperation between all branches of troops and armed services and the growing role of artillery, tanks and aviation. A number of theoretical and practical conclusions was drawn for the further development of Soviet military art, for improving the training of the troops and staffs and for changes in the TOE structure of the troops. As a whole, all of this played a definite positive role in strengthening the Soviet Armed Forces under the conditions of the growing threat of attack by Nazi Germany on the Soviet Union.

FOOTNOTES

1. "Sovetskaya Voyennaya Entsiklopediya" [Soviet Military Encyclopedia], Moscow, Voyenizdat, 1980, Vol 8, p 153.

2. TsGASA [Central State Archives of the Soviet Army], folio 32207, inv. 1, file 4, sheet 109.

3. Ibid., folio 32208, inv. 1, file 149, sheet 56.

4. "Proyekt Polevogo ustava 1939 g." [Draft of the 1939 Field Manual], Moscow, 1939, pp 22-23.

5. Ibid., p 149.

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45TH ANNIVERSARY OF SOVIET GUARDS COMMEMORATED

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 9, Sep 86 (signed to press 26 Aug 86) pp 78-83

[Article by Candidate of Historical Sciences S.I. Isayev: "Born in Combat (On the 45th Anniversary of the Soviet Guards)" published under the rubric "Military History Dates"]

[Text] In the summer and autumn of 1941, stubborn defensive battles against the Nazi invaders broke out on all sectors of the Soviet-German Front. In this fighting our troops showed the greatest courage, mass heroism and great military skill. Particularly distinguishing themselves were the 100th, 127th, 153d and 161st Rifle Divisions of the Western Front. In fighting on the main strategic sector, they caused tangible harm to the enemy pushing inexorably toward Moscow. The soldiers and commanders of these formations showed steadfastness on the defensive and courage and valor on the offensive. For the heroic feats, organization, discipline and exemplary military order, by the Order No. 308 of the USSR People's Commissar of Defense of 18 September 1941, the designated divisions were changed into guards and began to be named, respectively, the 1st, 2d, 3d and 4th Guards Rifle Divisions.(1) This date of 18 September 1941 is considered the birthday of the Soviet guards.

In the course of the fight against the Nazi troops, the ranks of the Soviet guards grew and by the summer of 1942 there were guards units in each Armed Service and branch of troops.

The first to receive the guards title in the tank troops was the 4th Tank Brigade. The personnel of this formation under the command of Col M.Ye. Katukov fought boldly and decisively at Moscow and Mtsensk. In particular, in the Mtsensk area units of the brigade for several days held up the attacks of two Nazi Panzer divisions and destroyed 133 tanks in the fighting.(2)

On 26 November 1941, the II and III Cavalry Corps and the formations and units comprising them became guards units for mass heroism, unprecedented courage and valor. Thus, the 5th Cavalry Division which became the 1st Guards distinguished itself in the fighting during the first days of the war and later in the defense of Kashira. The cavalry troops, regardless of the superiority of the enemy in men and weapons, repeatedly went over to counterattacks.(3)

The artillery troops of the 289th Antitank Artillery Regiment distinguished themselves in the fighting against the Nazi invaders on the approaches to Moscow and on 8 January 1942 this became the 1st Guards Antitank Artillery Regiment. The regiment's personnel distinguished itself particularly in repelling the Nazi tank attacks at Volokolamsk and Istra. The men of the regiment fought unstintingly and courageously in the course of the counteroffensive by the Nazi troops at Moscow.

On 8 January 1942, by the same order of the USSR people's commissar of defense, guards titles were awarded to the 296th, 509th and 760th Antitank Artillery Regiments as well as the 440th, 471st, 555th and 274th Artillery Regiments of the High Command Reserve as well as to the 36th Motorcycle Regiment and the 12th Signals Regiment.

On 6 December 1941, the 29th Fighter Air Regiment became the 1st Guards Air Unit. Then guards titles were awarded to the 526th, 155th and 129th Fighter Regiments, the 39th Divebomber Regiment and the 215th Ground Attack Regiment. These Air Forces units participated in the defeat of the Nazi tank divisions at Hartsevo and Velikiye Luki and operated boldly and decisively at Moscow.

On 18 January 1942, the minelaying and torpedo air regiment of the Red Banner Baltic Fleet became a guards unit for the exemplary execution of combat missions and for the heroism shown therein. The regiment's pilots provided an air cover for the ships in Kronshtadt and Leningrad and, in addition, repeatedly participated in raids against Berlin.(4)

The 72d Combined Air Regiment of the Northern Fleet became a guards air regiment on the same day and from the very first days of the Great Patriotic War it had courageously defended the fleet's ships and naval bases from the air and had skillfully attacked the enemy troops and transports, artillery and mortar batteries. Thus, on 15 September 1941, nine fighters from the regiment downed five enemy bombers and four fighters.(5)

In April 1942, guards ships appeared in the Soviet Navy. These were the cruiser "Krasnyy Kavkaz," the destroyer "Stoykiy," the minelayer "Marti," the minesweeper T-205 and four submarines: K-22, D-3, M-171 and M-174.

The cruiser "Krasnyy Kavkaz," in particular, supported the transporting of personnel and military equipment, it landed naval infantrymen in Odessa and Sevastopol and supported their actions on shore with the fire of the naval ordnance. Exceptional heroism and skill were shown by the cruiser's personnel in the Kerch-Feodosiya Landing Operation. In the course of it the crew repeatedly moored the ship without the aid of tugs, it unloaded troops, fought fires on the ship, repaired damage caused by artillery fire and aviation bombs and made fire strikes against the enemy, supporting the landing of troops.(6)

The crews of the submarines K-22 and D-3 distinguished themselves in destroying German transports carrying nickel and iron ore from Kirkenes and Petsamo.(7)

Table*

Number of Guards Armies, Corps, Divisions, Brigades and Ships in the Soviet Armed Forces on 9 May 1945

Field Forces, Formations and Ships	Ground Troops	Air Forces	Navy	National Air Defense Troops	Total
Armies					
— Combined-arms	11	—	—	—	11
— Tank	6	—	—	—	6
Groups					
— Horse-mechanized	1	—	—	—	1
Corps					
— Rifle	40	—	—	—	40
— Cavalry	7	—	—	—	7
— Tank	12	—	—	—	12
— Mechanized	9	—	—	—	9
— Air	—	13	—	1	14
Divisions					
— Rifle	117	—	—	—	117
— Airborne	9	—	—	—	9
— Cavalry	17	—	—	—	17
— Artillery	6	—	—	—	6
— Rocket artillery	7	—	—	—	7
— Antiaircraft artillery	5	—	—	1	6
— Air	—	50	2	1	53
Brigades					
— Motorized rifle	13	—	—	—	13
— Airborne	3	—	—	—	3
— Tank	66	—	—	—	66
— Mechanized	28	—	—	—	28
— Self-propelled artillery	3	—	—	—	3
— Artillery	63	—	1	—	64
— Mortar	1	—	—	—	1
— Antitank	11	—	—	—	11
— Rocket artillery	40	—	—	—	40
— Engineer	6	—	—	—	6
— Railroad	1	—	—	—	1
Areas					
— Fortified	1	—	—	—	1
Fighting Ships					
— Surface	—	—	18	—	18
— Submarine	—	—	16	—	16

* The table was compiled from data of the orders and directives of Hq SHC, the USSR People's Commissar of Defense, the People's Commissar of the Navy, the General Staff, the Main Directorate of Red Army Formations and the chiefs of the branches of troops for September 1941 — May 1945.

The 44th and 120th Fighter Air Regiments became the first guards units in the National Air Defense Troops and on 7 March 1942 these were changed, respectively, into the 11th and 12th Guards Units. They protected Leningrad and the capital of our motherland, Moscow, from the air.

On 28 April 1942, the 28th Railroad Brigade received the title of guards. Regardless of bombing, it had carried out the loading and transporting of freight by rail and the moving of troops across water obstacles. When the situation demanded, the men of the formation fought the enemy with weapons in hand. This was the case at Voroshilovgrad, where the composite battalion of the brigade blocked the path of the Nazi subunits advancing against the city.(8)

While in 1941, the guards title was awarded to rifle and cavalry corps and divisions, from 1942 this began to be awarded to tank and mechanized corps and to combined-arms armies, and from 1943, tank armies, air corps and divisions.

The first among the tank formations to receive this title was the XXVI Tank Corps. Its men distinguished themselves in the counteroffensive by the Soviet troops at Stalingrad in November 1942. In entering the breach, the tank troops rapidly outflanked the enemy, made a strong strike against it and in the course of 2 days of fighting reached the crossing over the Don. In cooperating with the motorized rifle troops, they seized the crossing and took the town of Kalach.(9)

The data on the guards formations, field forces and ships are shown in the table.

Here also, at Stalingrad, the 220th Fighter Division, the 263d Bomber Division, the 3d ADD [Long-Range Aviation] Division and the 102d Fighter Division of the National Air Defense Troops distinguished themselves.

The guards formations and units fought the enemy always and everywhere, in demonstrating examples of wholehearted dedication to the Soviet motherland, courage and valor. In accord with the demands of Hq SHC, the guards formations and units were used on the offensive for breaching the enemy defenses on the sector of the main thrust and on the defensive for decisive counterstrikes.

Among the 187 formations and units which distinguished themselves most in storming the capital of the Nazi Reich and which received the honorific designator of "Berlin," were 72 guards formations and units of the Soviet Armed Forces. Among them was the I Guards Red Banner, Orders of Suvorov and Kutuzov Kirovograd-Berlin Ground Attack Corps. It was organized in Moscow Oblast in September 1942 and had participated in the Velikiye Luki Offensive Operation, the battles at Kursk and on the Dnieper, as well as the Kirovograd, Uman-Borosani, Lwow-Sandomierz, Sandomierz-Silesian, Lower Silesian, Upper Silesian and Berlin Offensive Operations. The pilots of this formation made around 50,000 aircraft sorties and destroyed over 1,000 enemy aircraft in air battles and on airfields. Around 6,000 men from the corps were awarded orders and medals and 101 pilots received the title of Hero of the Soviet Union. Receiving this high title twice were V.I. Andrianov, T.Ya. Begeldinov, S.D.

Luganskiy, I.Kh. Mikhaylichenko, M.P. Osintsov, V.G. Ryazanov and N.G. Stolyarov.(10)

The 1st Guards Red Banner, Orders of Suvorov and Lenin, Brest-Berlin Motorized Engineer Brigade received its baptism in fire at Stalingrad. In then participating in the Battle of Kursk, in the liberation of the left-bank Ukraine and Belorussia, in the Vistula-Oder and Berlin Operations, the men of the formation deactivated tens of thousands of Nazi mines, they built and repaired numerous bridges across rivers and canals and removed an enormous amount of explosives from numerous industrial facilities which had been mined by the Nazis. During the war, 7,487 soldiers and officers from the brigade received orders and medals of the USSR and one was awarded the title of Hero of the Soviet Union.(11) It would be possible to give many similar examples of the courage and valor of the guardsmen.

...In the evening of 7 April 1945, the platoon of Guards Lt I.I. Pekshin (349th Guards Rifle Regiment of the 105th Guards Rifle Division from the 9th Guards Army of the Third Ukrainian Front) was one of the first to reach the Danube, having cut the river-side Tulln-Mukendorf Highway. By so doing the men cut off the escape route to the city of Tulln (Hungary) for a large enemy column. A fierce fight broke out in the course of which about 150 Nazis under the cover of fire from armored personnel carriers endeavored to dislodge the platoon. The gunner of the medium machine gun, Guards Pvt V.V. Borisov and his assistant Guards Pvt V.P. Antoneyev skillfully chose their firing position. For more than an hour they fired the Maksim against the attacking Nazis from the flank until they ran out of ammunition. When a Nazi armored personnel carrier drew near to the trench, Antoneyev coolly and skillfully threw a grenade. It began to smoke. The guardsmen had just two grenades each left. With them the men jumped out of the trench and rushed the Nazi infantrymen. After the battle, Guards Lt I.I. Pekshin found the severely wounded machine gunners among the numerous enemy killed by them. Soon both guardsmen were awarded the Order of Glory 2d Degree.(12)

...On 25 August 1943, a group of six ILs (75th Guards Ground Attack Air Regiment of the 1st Guards Ground Attack Air Division from the 8th Air Army of the Southern Front) under the command of Guards Lt D.T. Prudnikov took off to attack enemy troops in the area of Mokryy Yelanchik. In approaching the front line, the guardsmen encountered 12 Nazi bombers. D.T. Prudnikov led the group against the enemy aircraft. In the course of a fierce engagement, with accurate fire from machine guns and cannons he personally downed the leader of the Nazi group while the remaining crews destroyed another four Ju-87 in air combat. The Nazi formation was broken up, and having dropped their bombs on their own troops, the aircraft turned back. Seeing the picture, a group of 20 Ju-87 flying behind also got rid of the bombs and headed back. After this the six Soviet ILs made another three runs to attack the Nazi troop positions. As a result, the guardsmen downed five bombers and destroyed six enemy tanks. By the Ukase of the Presidium of the USSR Supreme Soviet of 4 February 1944, Guards Lt D.T. Prudnikov was awarded the title of Hero of the Soviet Union.(13)

...Guards Sr Sn V.D. Kuskov, a mechanic on torpedo boat No. 43 of the 1st Guards Torpedo Boat Division of the Red Banner Baltic Fleet) in 1943, suffered

a concussion in one of the attacks. In the course of the fighting, the port motor received a direct hit from an enemy shell and the oil line on the starboard motor of the boat was damaged. The guardsman made his way to the starboard motor and with his hands covered the damaged part of the oil line. He sustained severe burns on his hands but prevented the leaking of the oil, thereby ensuring the operation of the engine and helping to carry out the set mission by the boat.

On 1 July 1944, torpedo No. 43 was again heavily damaged in combat. A fire broke out in the engine room. The wounded Navyman V.D. Kuskov, in disregarding his pain and weakness, continued to struggle for the survival of the boat. When the order came to abandon ship, Kuskov and the Chief Mate G.I. Matyukhin put their own life jackets on two severely wounded officers. Losing blood, Kuskov for 2 hours held up his commander in the water until another boat of ours arrived for help. By the Ukase of the Presidium of the USSR Supreme Soviet of 22 July 1944, V.D. Kuskov was awarded the title of Hero of the Soviet Union.(14)

The units and formations which became guards units were presented guards colors while ships received flags. A chest insignia was struck for the servicemen.

The men of the Soviet Armed Forces also showed high moral-political and combat qualities as well as mass heroism in the war against imperialist Japan. The title of guards was awarded to 25 units and ships of the Pacific Fleet and Red Banner Amur Naval Flotilla.

The Soviet guards are presently the pride of the USSR Armed Forces and the bearer of heroic traditions and advanced experience.

FOOTNOTES

1. "Sovetskaya Voyennaya Entsiklopediya" [Soviet Military Encyclopedia], Moscow, Voyenizdat, Vol 2, 1976, p 496.

2. Ibid.

3. TsAMO SSSR [Central Archives of the USSR Ministry of Defense], folio 15-a, inv. 161, file 109, sheet 19.

4. TsVMA SSSR [Central Naval Archives of the USSR], folio 14, inv. 12, file 8, sheets 33-34.

5. "Voyevoy put Sovetskogo Voyenno-Morskogo Flota" [Campaign Record of the Soviet Navy], Moscow, Voyenizdat, 1974, p 189.

6. Ibid., pp 334, 349-350.

7. Ibid., pp 216-218.

8. TsAMO, folio 14-a, inv. 120, file 69, sheets 121-128.

9. "Sovetskiye tankovyye voyska 1941-1945" [Soviet Tank Troops 1941-1945], Moscow, Voyenizdat, 1973, p 81.

10. "Sovetskaya Voyennaya Entsiklopediya," Moscow, Voyenizdat, Vol 4, 1977, pp 186-187.

11. Ibid., Vol 1, 1976, p 593.

12. TsAMO, folio 105 gv. sd., inv. 2, file 13, sheet 233.

13. Ibid., folio 33, inv. 793756, file 35, sheets 578-582.

14. Ibid., file 52, sheets 256-257.

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